

VISIT...

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Additional notes

Arterial injuries

1. Transection injury presents with ischemia rather than hemorrhage.
2. The commonest type in cases of closed injuries is arterial contusion.
3. Heparin should be avoided except in isolated vascular injury.
4. Local heparin should be used routinely.
5. Injured main veins are repaired before the arteries.
6. Development of swelling after revascularization is an indication for fasciotomy.
7. In cases of intra-arterial thiopentone injection, the anesthetist should not remove the needle from the artery before injecting the heparin bolus intra-arterially.

Buerger's disease

1. Buerger's disease occurs exclusively in smokers.
2. Inter-digital fungus infection is a common association in Buerger's disease.
3. Angiography is rarely necessary to confirm the diagnosis.
4. I.V or intra-arterial PG-E may be useful in patients with poor distal run-off.
5. Amputation can be done adjacent to the line of demarcation with satisfactory primary healing.

Reynaud's disease

1. It more commonly affects young females in both hands. it is bilateral and symmetrical.
2. The radial and ulnar pulses are preserved.
3. Ca channel antagonists may be helpful in early stages.

Reynaud's phenomena

1. Cryoglobulinemia is accompanied by Reynaud's phenomena.
2. It may be a side effect to chronic intake of ergot containing drugs.
3. Atrophic disorders of the limb is accompanied by Reynaud's phenomena.

Diabetic foot

1. Plain X ray may show charcot's joint or gas in the soft tissue.
2. CT angiography is a useful investigation.
3. We should do an angiography in patients with clinical occlusion of a major artery to assess the feasibility of vascular reconstruction.

Aneurysms

1. Less common causes are cystic medial necrosis and Ehler's Danlos syndrome.
2. The splenic, renal and celiac vessels are possible sites of arterial aneurysms.
3. The most important sign is a swelling with expansile pulsations.

Abdominal aortic Aneurysms

1. The commonest symptom is back and flank pain.
2. Obesity may mask presence of pulsatile abdominal mass.
3. Abdominal distension may mask presence of pulsatile abdominal mass.
4. U/S is the investigation of choice to confirm the diagnosis.
5. Spiral C.T is superior to the conventional axial C.T.
6. Angiography is neither used to diagnose AAA nor to assess its dimensions.
7. Angiography is of value if the patient has been suspected to have associated arterial occlusive disease.
8. Rupture is the most frequent complication.
9. The risk of rupture is mainly related to the size of the aneurysm.

A-V fistula

1. The commonest type is that intentionally induced by surgeons to allow haemodialysis for CRF.
2. A common site is the femoral triangle (angiographic procedures the cannula may injure the vessels).
3. To allow haemodialysis for CRF patients, surgeons do A-V fistula between the cephalic & radial veins.

Superficial thrombophlebitis

1. Anti-inflammatory drugs are usually enough for treatment for the majority of cases.
2. As there is inflammation, pulmonary embolism never occur.
3. Antibiotics not indicated except if there is evidence of infection.
4. Anticoagulant therapy is given in severe progressive cases.
5. Prophylactic saphenofemoral or saphenopopliteal disconnection is done if there is tenderness less than 10 cm from the junction.

D.V.T

1. 90% of occluded veins will be re-canalized within 9 months.
2. Prophylactic heparinization can lower the incidence of DVT by 50%.
3. Elevations of the leg 15-20 degrees above the level of the heart can prevent further thrombosis.
4. Continuous I.V infusion of unfractionated heparin is the ideal method to give it.
5. The use of S.C LMW heparin is less likely to cause bleeding.
6. For using oral anticoagulants, PT and PC should be measured before the start, 5 days after then every 2 weeks repeatedly.

Additional notes

7. Bleeding resulted from oral anticoagulants, treated by lowering the dose. But in server cases 10-20mg vit K I.V injection can be given.
8. I.V.C filter is inserted opposite to the 2nd lumbar vertebra.
9. In pulmonary embolism, the most common symptom is dyspnoea.
10. In pulmonary embolism, the least common symptom is syncope.

Varicose veins

1. Klippel-Trenaunay syndrome (KTS) is a rare congenital vascular disorder in which a limb may be affected by secondary varicose veins.
2. Venous ulcers constitute 90% of chronic leg ulcers.
3. Rarely the venous ulcer results from 1ry V.Vs. In this case, it is usually transient and heals rapidly.

Lymphatic disorders

Hodgkin's disease

1. The diagnostic feature is the finding the characteristic Dorothy-reed Sternberg cells.
2. Lymphocytic predominance type carries the best prognosis.
3. Giant cells are rare in Lymphocytic predominance type.
4. The neck is the preferred site for LN biopsy.
5. In LN biopsy, we should take the whole LN without rough manipulation to preserve its architecture.
6. Splenectomy is important to spares the kidney and lung the hazards of radiation injury.
7. Radiotherapy is used as a supplement to control bulky cervical LN.
8. 5-year survival rate is 100% with proper treatment of stage 1A with lymphocytic predominance.

Non-Hodgkin's disease

1. It has higher incidence with AIDS.
2. It may be related to infection with HTLV-1.
3. B cell lymphoma is the commonest type.
4. LN enlargement is similar to that of Hodgkin's disease.
5. Staging laparotomy is rarely indicated.
6. Mycosis fungoides is a variant of NHL in which skin eruption is the 1st of the disease manifestation.
7. Surgery is followed by radiotherapy and chemotherapy.
8. Gastric lymphoma has a better prognosis than gastric adenocarcinoma.

Burkitt's lymphoma

1. It is common among children living in the eastern part of Africa.
2. It is a malignant tumor of the B-lymphocytes.
3. It results in a swelling that distorts the face, displaces the eye and partially occludes the mouth.
4. The initial good response to chemotherapy should be followed by further cycles to prevent recurrence.

Other notes

1. Infectious mononucleosis is a cause of acute specific lymphadenopathy.
2. The commonest organisms causing acute lymphangitis are streptococci.
3. The commonest groups of LNs affected by lymph born TB lymphadenitis are cervical LNs.
4. Blood born TB lymphadenitis may be mistaken for hodgkin's disease.
5. Burns or irradiation of the regional LNs results in lymphoedma.
6. Lymphoedma precox is the commonest type of primary Lymphoedma.

Mouth, cheek & tongue

Oral cavity

1. The Oral cavity is full of commensals.
2. Wounds caused by human bite may develop sever infection.
3. Rapid replacement of surface cells limits the ability of the commensals to harm the oral cavity
4. The Saliva & its mild antibiotic activity limit the harmful effect of the commensals on oral cavity.
5. Tongue-tie is due to short fibrous lingual frenum.
6. Tongue-tie is possibly results in speech defect.
7. The commonest cause of tongue injuries is biting the tongue.
8. Tongue injuries can be associated with Jew fracture due to RTA.

Carcinoma of the tongue

1. Pain, early due to infection, later due to lingual nerve infiltration.
2. Extensive infiltration of the floor of the mouth results in ankyloglossia.
3. Surgery is indicated in small growth, T0, T1 and T2.
4. Preoperative irradiation by 4000 rad may be advised.
5. T1&T2 (Less than 4 cm) may equally benefit from surgery or radiotherapy.
6. Radiotherapy is avoiding the disfiguring side effects of surgery.
7. Mucositis, dysphagia & osteo-radionecrosis are disadvantages of Radiotherapy.

Additional notes

Teeth, gums & jaws

Carcinoma of maxilla

1. Carcinoma of maxilla is the commonest malignant tumor of maxilla.
2. It affects both sexes equally.
3. Chronic affection of the antrum is a predisposing factor.
4. The diagnosis is suspected if pain and chronic sinusitis in old patient fail to respond to the ordinary treatment.
5. In early cases, both surgery & radiotherapy produce equal results.
6. The standard operation is total maxillectomy.
7. In advanced cases, a combination of surgery & radiotherapy is better than either alone.
8. In recurrent cases, intracavitary radiation by radium needles is administered.

Others

1. Sarcomatous epulis may occur on top of a fibrous epulis.
2. Sarcomatous epulis, treated by wide excision with the underlying bone.
3. Radiotherapy has no role in treatment of carcinomatous epulis.
4. Dentigerous cyst may be due to cystic degeneration of dental follicles.
5. Adamantinoma affects middle-aged females 25-45y.
6. Ivory osteoma can affect the ascending ramus of the mandible and the outer surface of maxilla.

Salivary glands

Non-neoplastic salivary diseases

1. Unlike mumps, sialiectasis is usually unilateral and recurrent.
2. Childhood sialiectasis causes no trouble after the age of 15 years.
3. Mumps is the commonest cause of bilateral salivary gland swelling.
4. Clindamycin attains the highest salivary concentration.
5. Surgical drainage of parotid abscess is done under general anesthesia.
6. Saliva of the submandibular gland has the highest Ca concentration.
7. Sjogren's disease is thought to be caused by the cytomegalovirus.

Salivary neoplasms

1. Carcinoma ex pleomorphic adenoma presents as a painless swelling that has been stationary for years and is now getting bigger.
2. Pleomorphic adenoma of parotid raises the lobule of ear and does not affect facial nerve.
3. Open surgical biopsy of the major salivary glands is contraindicated. FNAC is safer.
4. For tumors of the minor salivary glands of the mouth cavity, excision biopsy is feasible.
5. CT and MRI are the most useful method for assessment.
6. Unlike other salivary neoplasms, adenolymphoma & oncocytoma show a hot spot on isotopic scanning.
7. Even if the facial nerve is preserved in parotid surgery, nerve weakness commonly develops because of neurapraxia that recovers spontaneously few months after the operation.
8. The majority of the tumors arise in the parotid gland are superficial to facial nerve.
9. During submandibular sialadenectomy, 3 nerves can be injured (mandibular division of facial N, inguinal & hypoglossal nerves).
10. The commonest cause of submandibular sialadenectomy is stone in it.
11. For low grade mucoepidermoid carcinoma an attempt to preserve the facial nerve is warranted.
12. For tumors that are clinically malignant, treatment is modified according to the aggressiveness of it.

THE NECK, PHARYNX & LARYNX

1. If the cervical sinus persists, it becomes a branchial cyst.
2. Branchial cyst is differentiated from cold abscess by finding cholesterol crystals in the aspirate.
3. Cystic hygroma appears as a painless swelling that appears bluish as the overlying skin is thin.
4. Excision of Cystic hygroma swelling at the age of 3 years should be done.
5. Sternomastoid muscle develops by the union of 3 somites.
6. Sternomastoid tumor results from interruption of blood supply to the central somite, which occurs either before or after birth resulting in congenital teratocyst.
7. Unstable cervical spine fracture & dislocations can cause paraplegia, quadriplegia or immediate death.
8. In neck injuries, the most commonly injured structures are the big vessels, spinal cord and the aero-digestive tract in that order.
9. Rarely superficial cellulitis above the level of the hyoid bone can lead to sudden asphyxia in children.
10. Ludwig's cellulitis is usually results from streptococcal infection.
11. Half of lymph nodes of the body are present in the neck.
12. **Supraclavicular LNs**
 - a. are part of the lower deep cervical LNs.
 - b. are secondary stations for breast, U.L, apex of lung, abdominal viscera and tests.

Additional notes

- c. On the left side may be involved in drainage the malignancy below diaphragm.
- d. May be involved in drainage of apical lung cancer (pancost tumor).

13. Thoracic outlet syndrome (written)

- a. The lower trunk of Brachial plexus is the main structure to be compressed.
- b. Compression of subclavian vein produces subclavian & axillary vein thrombosis.
- c. Compression of subclavian vein produces chronic venous insufficiency of upper limb.
- d. A weaker radial pulse than the opposite side may be detected.
- e. DD from other causes of Raynaud's phenomenon e.g. Raynaud disease, system lupus
- f. Treated by endovascular stenting of the stenosed segment of subclavian artery.

14. Suprahyoid block neck dissection (written)

- a. Submandibular salivary glands are removed.
- b. Indicated in carcinoma of the lower lip.
- c. Indicated in early cases of carcinoma of tip of tongue & floor of the mouth.

15. Modified radical block neck dissection (written)

- a. Indicated in thyroid carcinoma.
- b. Indicated in bilateral block neck dissection, preservation of one jugular vein on the less affected side is necessary.

16. Carotid body tumor (written)

- a. Angiography can prove the diagnosis.
- b. Present usually at the middle age.
- c. It has smooth but may be lobular surface.
- d. It exhibits transmitted pulsations from the underlying carotid artery.
- e. Treated by excision of the tumor with preservation of the internal carotid artery.
- f. If preservation of the internal carotid artery is impossible, it should be replaced by a graft.

17. Structures to be preserved in radical neck dissection are

- Carotid artery.
- Vagus nerve.
- Accessory nerve.

18. Pharyngeal diverticulum

- a. Esophageal opening lies high in the anterior wall of the pouch.
- b. In long-standing cases, there is history of dysphagia recently aggravated and associated with regurgitation of undigested food after meals.
- c. Sometime there is an irritable cough from overflow of food into the larynx.
- d. In about one-third of cases the pouch is large enough to form a visible swelling in the neck which enlarges when the patient drinks and can be emptied by pressure.
- e. In advanced cases, progressive loss of weight occurs and may lead to cachexia.
- f. Barium swallow may show a bulge in the posterior wall of the pharynx in early cases but in late cases, there is a flask shaped pouch.
- g. Oesophagoscopy is not recommended.

Thyroid

1. Causes of thyroiditis

- a. Acute bacterial thyroiditis (rare) or Chronic e.g. T.B (rare).
- b. Subacute (De Quervain's Disease)
- c. Autoimmune goiter

2. De Quervain's Disease

- a. It is characterized by remissions & exacerbations, but usually self-limited.
- b. It shows rapid response to oral prednisolone is diagnostic.
- c. Mild manifestations of thyrotoxicosis may occur due to liberation of hormones from destroyed tissue.

- 3. Hashimoto's thyroiditis presents with goiter with a flat-topped nodularity.
- 4. FNAC or true cut biopsy may be required to differentiate Hashimoto's thyroiditis from nodular goiter or carcinoma.
- 5. Patients develop goiter at young age, sometimes several brothers or sisters are affected. The patient is liable to get recurrent goiter after surgery.
- 6. In simple goiter, Immunoglobulins act on oversensitive cells or receptors producing a nodular goiter with marked heterogeneity of structure and function between adjacent follicles.
- 7. In simple goiter, in single lobule all follicles behave similarly.

8. Retrosternal goiter.

- a. Patient usually present after middle age.
- b. Dyspnea is worse at night and is often spasmodic and aggravated by lying down or neck flexion.
- c. Many patients prefer to spend the night in a chair.
- d. Some patients are diagnosed as asthmatics.
- e. Plain chest X-ray shows a shadow in the superior mediastinum which moves vertically with deglutition unless the goiter is firmly wedged between structures of intra-thoracic type.
- f. Calcification often occurs in the wall of the goiter & may be demonstrated radiologically.

Additional notes

- g. CT scan of the thorax will relieve the exact level of the retrosternal extension and its anatomic relations.

9. Toxic goiter

- Jod-basedow thyrotoxicosis is temporary & very rarely permanent.
- Neonatal thyrotoxicosis subsides in 3-4 weeks upon decline of the titer of antibodies in the baby's serum.
- In Graves' disease thyroid stimulating ABs leading to release of cAMP leading to increased production and activation of T₄.
- M.P of Graves' disease there is cells that full of granules, acini that contain less vacuolated colloid or devoid of it. Marked vascularity making surgery, if indicated, difficult.
- Autonomous toxic nodule is not due to thyroid antibodies.
- Nodular toxic goiter is very rarely accompanied by extra-thyroidal manifestations.
- In Nodular toxic goiter, occasionally one or more nodules become the site of hyperactivity.
- 60 mg daily of carbimazole is the maximum dose.
- The dose of Propylthiouracil is 100 mg t.d.s.
- Atenolol (B₁ blocker) is alternative to propranolol in asthmatic patient with thyrotoxicosis.
- Iodides cannot be used for long time.
- The minimum age for the use of radioactive iodine in many centers is now 25ys.
- Solitary thyroid nodule is treated by ipsilateral total lobectomy.
- Some surgeons advocate total thyroidectomy for treatment of toxic goiter.
- A sleeping pulse 80/min is considered effective preoperative treatment
- In pregnancy, the dose of an antithyroid drug is adjusted according to the serum level of free T₄.
- Surgery after a short course of anti-thyroid drugs & propranolol proved to be safe during the 2nd or 3rd trimester.
- During lactation, propyl-thiouracil is recommended as it is excreted in a harmless very low concentration in milk.
- In thyrocardiac patients. Cardiac conditions take the priority in management.

10. Solitary thyroid nodule

- In FNAC, false +ve result occurs in 2% while false -ve result occurs in 3% of cases.
- True cut biopsy may cause hematoma.
- The surest method for diagnosis is to do lobectomy (not enucleation) of the affected side then d a frozen section histological examination in suspicious cases.

11. Thyroid cancer

- Papillary carcinoma spread is mainly lymphatic, but blood spread may occur with tumors that extend outside the thyroid.
- Medullary carcinoma is considered a part of apudomas.
- The mitotic growth of Medullary carcinoma is usually very low.
- Estimation of serum calcitonin is not a routine investigation.
- If the diagnosis is still in doubt, the best policy is to do surgical exploration of the thyroid & completely resects the affected lobe then does frozen section so that completely definitive treatment is preformed simultaneously.

12. Thyroidectomy

- Tension hematoma is usually due to slipped ligature of superior thyroid pedicle but occasionally may be due to thyroid remnant or a thyroid vein.
- Tracheal collapse due to tracheomalacia may pass unnoticed until the patient develops severe progressive hypoxia and cerebral damage. Whenever, respiratory obstruction is suspected, an endotracheal tube should be immediately inserted & IV corticosteroid is taken.
- Improvement of voice usually occurs within 6 months after unilateral RLN injury.
- Parathyroid insufficiency presents 2-5 days post-operatively. Delay of appearance of hypocalcaemia to 2-3 weeks is very rare. It may be temporary or permanent.
- Rarely thyrotoxic crisis may be the 1st presentation of undiagnosed thyrotoxicosis.
- A granuloma may occur if non-absorbable suture material is used.
- Thyroid insufficiency occurs as an insidious process over period of 2-5 years, at an incidence amounting to 20-45%.
- Assessment of serum Ca by the 6th week is advised.
- Follow up every 6-12 month for possible recurrence or development of hypothyroidism.

13. Parathyroid glands

- arise from the Branchial pouches III and IV.
- Inferior Parathyroid glands are associated with thymus gland and derived from third pouch.
- 80% of cases there are four glands, which are symmetrical in position on both sides.
- Commonest site of Inf. glands is the area of intersection of inferior thyroid artery and RLN.

Additional notes

- e. Histology, the main cells are chief cells, which are of two types light, and dark the latter is more active in parathyroid hormone (PTH) production.
- f. A single adenoma is the cause of 92% of cases of hyperparathyroidism.
- g. The most accurate localization of hyperactive parathyroids is by surgical exploration of neck.

14. Pheochromocytoma

- a. CT & MRI can give accuracy up to 100%.
- b. ^{113}I MIBG detects occult metastases.
- c. Early onset of HTN, recent onset with retinopathy are indications for screening for it
- d. Episodic HTN esp. with postural hypotension is indications for screening for it.

BREAST

1. Anaerobes are commonly responsible for non-lactational mastitis.
2. Mammary fistula may follow spontaneous or surgical drainage of breast abscess.
3. Antiboma is a chronic abscess treated by prolonged use of antibiotics instead of surgical drainage.
4. According to fibrocystic disease of the breast, chronic interstitial mastitis is misnomer as; there is no evidence of inflammation.
5. The commonest symptom of duct papilloma is bloody or bloody stained nipple discharge.
6. Phylloides tumor tends to enlarge slowly & to reach a large size.

7. Breast ultrasound

- a. Breast U/S helps to differentiate between chronic abscess & carcinoma.
- b. A speculated hypo-echoic mass more deep than wide suggests a malignant lesion.
- c. Malignant lesion receives blood flow from all around with turbulent speed with turbulent speed
- d. Benign lesions receive blood flow from one side at a low speed.
- e. It is particularly useful in young women in whom mammography is not helpful.

8. Breast carcinoma

- a. The mean age of affection is 60 y. and 20% of cases are familial.
- b. The cut surface of a benign breast lesion tends to become convex, white rather than grey & feels smooth & rubbery, not gritty.
- c. Inflammatory carcinoma is the most malignant type.
- d. Bones commonly involved by metastasis include the vertebral column & skull.
- e. In modified radical mastectomy, we spare axillary Vs, N to serratus ant & N to latissimus dorsi.
- f. Postoperative radiotherapy to the internal mammary & supra-clavicular lymph nodes is advised for patient with positive axillary LN. It does not improve survival, but it does reduce the incidence of local recurrence.
- g. Palliative treatment is carried out to T4 patients and to recurrent cases.
- h. Very early postoperative edema may be caused by thrombosis of axillary vein.
- i. S.V.C obstruction is life-threatening condition & radiotherapy is the treatment of choice.
- j. Measurement of tumor proliferation by thymidine labeling index & Measurement of oncogene products helps in diagnosis of breast cancer.

The liver

1. Anatomy of the liver

- a. The parietal surface is covered by peritoneum, except for a small bare area to the right of IVC sulcus and at the attachments of the peritoneal ligaments.
- b. Falciform ligament is continuous to the left with left triangular ligament.
- c. Falciform lig. is continuous to the right with coronary ligament & then left triangular ligament.
- d. The aditus of the lesser sac is bounded by:
 - i. Ant: free bord. of lesser omentum
 - ii. Super: caudate lobe of liver
 - iii. Post: IVC
 - iv. Infer: 1st part of duodenum
- e. The right hepatic vein ends directly in IVC.
- f. The left & middle hepatic veins unit to form a short trunk before joining IVC.
- g. Surgically, the liver is divided into 2 almost equal lobes by the middle hepatic vein.
- h. Segment one, is the caudate lobe that has a special status as it is supplied by hepatic artery and portal vein branches from both sides & it is drained directly by multiple small veins into IVC.
- i. Microscopically, the liver is covered by the glisson's capsule.
- j. Surgical resection of a part of cirrhotic liver carries a bad prognosis because of diminished capacity of regeneration & poor function of the remaining part
- k. U/S is the 1st choice imaging investigation of the liver.

2. Liver biopsy

- a. Hemangiomas & hydatid cysts should not be biopsied.
- b. The standard method is the per-cutaneous technique.
- c. PT should not be prolonged more than 3 times.
- d. The commonly used needles are the aspiration (Menghini) and the cutting (true cut) types.

3. Liver trauma.

- a. U/S is the 1st choice imaging investigation of the liver.
- b. The prognosis is largely depends on associated injuries.
- c. The rate of Iatrogenic liver injuries is increasing.
- d. Chest stabs as high as the 4th intercostals space can transfix the diaphragm and injure the liver.
- e. Tying tissues over a pedicled omentum helps homeostasis.
- f. A lobe that is shattered beyond salvage is treated by excision of this lobe.
- g. Firm packing of inaccessible bleeding areas may be the only method for temporary arrest of bleeding till transferred to specialized center.

4. Pyogenic liver abscess

- a. It is a serious highly fatal disease.
- b. The key to improving the prognosis is the early diagnosis
- c. The commonest source is Biliary tract and E. coli is its likely organism.
- d. Portal vein is a source of infection and streptococci & anaerobes are common organisms.
- e. Regarding hematogenous abscess, staphylococcus aureus is the usual causative organism.
- f. May occur in immune-compromised patient.
- g. May occur on-top already existing liver lesion.
- h. The patient may only present with pyrexia of unknown origin.
- i. There is now a trend to depend on percutaneous guided drainage of pus.

5. Amoebic liver abscess

- a. The low standards of hygiene, coupled with high immunity favors ameobiasis infestation.
- b. Patient is suffered from a low-grade fever.
- c. A clear history of an attack of dysentery is not always obtained.
- d. An improvement in the general and local conditions after 3 days of treatment confirms the diagnosis.
- e. If the abscess cavity has recollected and is more than 5 cm, aspiration is repeated.

6. Hydatid disease of the liver

- a. Prevalent in sheep-rearing parts of the world.
- b. Daughter cysts may form inside the main cyst.
- c. U/S or CT scan may visualize daughter cysts.
- d. Some authors now advocate a policy of percutaneous aspiration and injection of hypertonic saline or alcohol.
- e. Albendazole is not a good substitute for surgery.

7. liver cirrhosis

- a. After treating the underlying insult, there can be some reversal of fibrosis.
- b. Bilharzial peri-portal fibrosis is not to true cirrhosis.
- c. Cirrhotic patient have a certain clinical association with some problems including chronic P.U. chronic pancreatitis, enlargement of the parotid glands, Dupuytren's contracture and HCC.

8. Portal hypertension

- a. The causes that precipitate bleeding are Not exactly known.
- b. High portal pressure, trauma of food or reflux esophagitis are factors that supposed to precipitate bleeding.
- c. First time variceal bleeding carries a mortality of up to 50%
- d. Endoscopic screening for varices should be done in all cirrhotics.
- e. Minor hematemesis may be followed by massive bleeding.
- f. 1^{ry} prevention with propranolol or nadolol is started if large varices are found.
- g. 1^{ry} prevention, the risk of First time variceal bleeding by up to 40%.
- h. Morphine and pethidine are contraindicated in these patients.
- i. Band ligation is now the 1st choice
- j. Fresh frozen plasma may be needed to correct coagulopathy in case of variceal bleeding
- k. One the patient starts bleeding he is liable for further attacks.
- l. Regarding warren shunt, the rational of this shunt is to selectively decompress the critical area of the lower esophagus without interfering with the portal flow

9. Liver tumors.

- a. Hemangiomas are the commonest benign tumors of the liver.
- b. Suspicion of a hemangiomas is a contraindication for biopsy.

10. Liver metastasis.

- a. they are usually adenocarcinomas.
- b. In Liver metastasis, Systemic Chemotherapy is given in the presence of other organ affection.
- c. Selective intra arterial chemotherapy is indicated when the liver is the only organ with metastasis.
- d. A solitary metastatic nodule can be removed through a wedge resection.

- e. multiple metastases that are confined to one surgical lobe of the liver can be removed by RT or LF hepatectomy.

11. Liver tumors, primary liver cancer.

- a. The highest world's incidence of primary liver cancer is in Mozambique.
- b. Fibrolamellar HCC is a variety of the massive type of HCC that affects non-cirrhotic young females, and hence has a better prognosis.
- c. Hepatoblastoma is a form of HCC that occurs in children.
- d. Alpha-feto protein is present in the serum of the fetus.
- e. Alpha-feto protein Level above 200ng/ml is suggestive for HCC.
- f. Alpha-feto protein Level above 2000ng/ml is diagnostic for HCC.
- g. Triphasic multi-slice CT scan via an I.V contrast is mandatory to show anatomical relations of the tumour to the liver vasculature.
- h. Preoperative guided biopsy is not desirable.
- i. Intra-operative ultrasound is used to detect small lesions, which may be missed by other imaging.
- j. Intra-operative ultrasound allows safer liver resection.
- k. Laparoscopy may be done to visualize the extent of the tumor and to perform laparoscopic U/S.
- l. PET-CT scan used to detect any systemic metastases.
- m. Trans-arterial chemoembolization is a palliative treatment in inoperable cases.

12. Liver Cholangiocarcinoma.

- a. It arises from the intra-hepatic bile ducts is much less common than HCC.
- b. It has its highest incidence in the Far East.
- c. Its development is related to infestation with the liver fluke *clonorchis sinensis* that causes ascetic cholangitis.
- d. It spreads widely inside and outside the liver.
- e. By the time the tumour is discovered, the disease is usually so advanced to cure.

Biliary system

13. Regarding Biliary system.

- a. The normal capacity of Gall bladder is about 50ml.
- b. The cystic duct is 2-3 cm long and 2-3mm in diameter.
- c. The mucosa of cystic duct is thrown into crescent-like folds called spiral valve of Heister.
- d. Presence of air in G.B can be seen in acute emphysematous Cholecystitis or after sphincterotomy operations.
- e. ERCP may be complicated with duodenal perforation.
- f. Radio-isotopic scan can be used to diagnose congenital Biliary atresia & to visualize a Biliary enteric anastomosis.
- g. PTC is indicated to diagnose high obstruction of biliary ducts as in postoperative biliary stricture or in hilar cholangiocarcinoma.

14. Gall stones

- a. Female predominance is not present with pigment stone.
- b. Female predominance is not present after the age of 60.
- c. Brown pigment stones form in infected, stagnant bile, usually in the bile duct, or in the presence of F.B e.g a Biliary stent.
- d. Crohn's disease, small bowel resection or bypass procedure are predisposing to Gallstones.
- e. D.M via autonomic neuropathy of the ileum may affect the enterohepatic circulation and predisposing to Gall stones.
- f. Liver cirrhosis increases the incidence of Gallstones but black pigment stones are the commonest.
- g. Infection plays a role in the formation of brown pigment stones.
- h. Most of Gallstones are silent.
- i. Prophylactic cholecystectomy for silent stones are rarely indicated.
- j. About 90% of patients with carcinoma of the G.B have Gallstones.
- k. Gallstones ileus is a rare complication.
- l. In Calcular Cholecystitis, HIDA scan is not commonly performed.
- m. In Cholecystectomy, the primary hemorrhage may be due to injury of the cystic A, RT hepatic A, or from The G.B fossa.
- n. Antibiotic used in acute Cholecystitis must be effective against gram -ve bacilli.
- o. It is a trend now to treat acute Cholecystitis by early surgery.

15. Calcular obstructive jaundice

- a. It is noted that there is no relation between the size of the stone and the development of jaundice.
- b. In absence of cholangitis, Calcular obstructive jaundice is **not** an emergency.

16. Strictures of the bile ducts

- a. Traumatic stricture is usually at the common hepatic duct.

Additional notes

- b. The commonest cause is iatrogenic injury of the CBD during Cholecystitis.
- c. In sclerosing cholangitis if there are no dilated segment to perform anastomosis, these patients are candidate for liver transplantation.
- d. If the Cholangiocarcinoma is at porta hepatis (Klatskin's tumour), the G.B will be collapsed

Pancrease

1. Pancrease

- a. Alpha -cells secrete glucagon.
- b. Beta -cells secrete insulin.
- c. Delta -cells secrete somatostatin.
- d. PP -cells secrete pancreatic polypeptide.
- e. Gastrin producing cells are not found in normal pancreas but appear in the Z.E syndrome.
- f. Duodenal obstruction resulting from annular pancreas is treated by duodenojejunostomy.

2. acute pancreatitis

- a. Corticosteroids administration and hyper-triglyceridaemia are rare causes of acute pancreatitis.
- b. Upper abdominal pain is the main symptom that presents in all cases.
- c. The pain may follow a heavy meal or ingestion of alcohol.
- d. Fever and tachycardia are common.
- e. A tinge of jaundice is sometimes observed.
- f. Serum amylase remains elevated for 2-3 days.
- g. Mild bilirubin elevation, hypoproteinaemia and elevated blood urea are present.
- h. The hematocrit is usually elevated because of the fluid loss, but is lower in cases of hemorrhagic pancreatitis.
- i. CT scan revealed enlargement of the pancreas and peri-pancreatic edema & intraperitoneal fluid.
- j. Pancreatic necrosis is diagnosed when a big part of the parenchyma is not enhanced, in CT scan with I.V contrast.
- k. The presence of necrosis is a strong indicator of the severity of the attack.
- l. CT scan should be performed at least 48 h after the onset of symptoms in order to detect the extent of necrosis.
- m. Replacement therapy is monitored by vital signs, urine output & CVP.
- n. For patients with severe attacks total parenteral nutrition is induced.
- o. The value of antibiotics is controversial.
- p. The preferred antibiotics are those of the carbapenem class.
- q. ERCP is not recommended unless therapeutic procedure is planned.
- r. Pancreatic pseudocyst or abscess that is not resolved in 6 weeks requires drainage.
- s. Small pancreatic pseudocyst is painless and may be discovered by follow up sonography.

3. Pancreatic carcinoma

- a. More in males, between 55-70 years.
- b. P.F are chronic pancreatitis, alcohol abuse, high protein, high fat food and smoking.
- c. Sometimes patient complains from painful, temporary jaundice, also may affect females.
- d. Thrombophlebitis migrans is known to accompany visceral malignancy.
- e. CA 19-9 is a method to confirm diagnosis and for follow-up.
- f. CEA is a tumour marker for GIT carcinomas & is elevated in only 40-50% of patients.
- g. CT scan is ideally it should be triphasic, spiral CT with thin cuts (3mm)
- h. CT scan shows hypodense lesion. It is important to look for the invasion of sup. mesenteric vessels and the portal vein.
- i. Biopsy is not needed if there is clinical evidence, elevated CA 19-9 & hypodense lesion on triphasic CT.
- j. Negative cytology cannot rule out malignancy.
- k. In Whipple operation, the head & neck of pancreas, whole duodenum, the antrum of stomach, G.B and CBD are removed.
- l. 5-fluorouracil and gemcitabine are recommended before and after operations.
- m. When operating on obstructive jaundice patients excessive bleeding, septicemia, postoperative renal failure and liver failure.

4. Insulinoma

- a. Usually benign and few cases are malignant.
- b. Commonly found in the body and tail. Rarely multi-centric.
- c. Some of them are part of MEN type one.
- d. Patient presents with Bizarre behavior and unconscious episodes and some patients are misdiagnosed as having a psychiatric illness.
- e. Hypoglycemia below 45mg/dl is present during the height of the attack.
- f. Hypoglycemia is accompanied by high insulin level in the blood confirms the diagnosis.

Additional notes

- g. Localization is difficult and may be accomplished by CT scan, selective angiography and by selective venous sampling.
- h. Intra-operative U/S is a very useful localization method.

5. Gastrinoma (Z.E syndrome)

- a. 60% of cases are malignant.
- b. Most Gastrinoma are found in the Gastrinoma triangle.
- c. Diarrhea is present in a third of cases.
- d. Radioimmunoassay estimation of serum gastrin shows serum levels more than 500ng/L.
- e. Only 20% of cases are resectable because of multiplicity and poor localization.
- f. Usually tumor resection is impossible, and total gastrectomy is done to completely abolish gastric secretion.
- g. A less effective therapy is intensive therapy with P.P.Is.

Spleen

1. Regarding Spleen

- a. The phrenico-colic ligament attaches the splenic flexure of the colon to the diaphragm.
- b. The lower pole of spleen is in contact with the phrenico-colic ligament, which is thought to be one of its main supports.
- c. In splenomegaly, up to 80% of platelets are sequestered in the spleen & this may lead to thrombocytopenia.
- d. The majority of accessory spleens occur at the hilum, in the greater omentum or along the splenic vessels and pancreas.
- e. If the spleen is removed for hemolytic anemia, a careful search must be made for accessory spleens which can cause recurrent symptoms if not removed.
- f. Regarding wandering spleen, torsion of the pedicle is the most frequent complication
- g. It helps in the production of various antibodies including
 - i. Ig M.
 - ii. Tuftsin which stimulates phagocytosis by neutrophils.
 - iii. Opsonins, which react with bacteria and fungi to make them more susceptible to phagocytosis.
 - iv. Properdin which fixes complement to bacterial and fungal surface prior to phagocytosis
 - v. Interferon which is antiviral antibody
- h. A minor splenic injury in a hemodynamically stable patient can be treated conservatively by rest in bed, resuscitation and meticulous follow up for up to 7-10 days.
- i. Regarding hereditary spherocytosis
 - i. Autosomal dominant.
 - ii. Pigmented gallstones may occur in up to 60% of patients; may occur under 10 years old.
 - iii. Rarely chronic leg ulcers may develop. They may be bilateral.
 - iv. Splenectomy is curative. Best time between 6-7 years old
 - v. If the patient has gallstones, cholecystectomy can be performed simultaneously.
- j. Regarding ITP, Splenectomy is indicated if ITP manifestations persist for more than 9 months. A response to steroids usually predicts a good response to splenectomy.

Peritonium

1. Peritoneum

- a. The parietal peritoneum is sensitive.
- b. Anterior parietal peritoneum is the most sensitive.
- c. The visceral peritoneum receives innervations only from the autonomic nervous system and is relatively insensitive.
- d. Acute generalized peritonitis is an emergency because it denotes failure of the defensive mechanisms to localize the infection.

2. mesenteric cysts

- a. Treatment of false mesenteric cysts is by evacuation.
- b. Tuberculous mesenteric cysts Treatment is by anti-tuberculous drugs.
- c. Chylolympatic cyst is the commonest.
- d. More in children and young adults.
- e. Complains of an abdominal swelling or dyspepsia.
- f. Pain is usually absent.

INTESTINE

2. Surgical anatomy

- a. Regarding midgut rotation, the yolk sac connected to the midgut by the vitello-intestinal duct.
- b. In the 4th week of intrauterine life, the midgut extrudes into the umbilical cord.
- c. Later on, reduction of this loop with rotation happens through three stages
 - i. 1st: 90 anticlockwise rotation.

Additional notes

- ii. 2nd: further 180 anticlockwise rotation.
- iii. 3rd: descent and fixation of the caecum and proximal colon to the posterior abdominal wall.
- d. The jejunum is larger in diameter, thicker walled, has more prominent mucosal folds and has less mesenteric fat than the ileum.
- e. Jejunal mesentery has one or two vascular arcades and Long vasa recta.
- f. The mesentery of ileum has multiple arcades and shorter vasa recta.
- g. The sigmoid mesocolon has an inverted "V" attachment to the pelvic brim.
- h. The apex of the "V" overlies the left ureter as it cross bifurcation of left common iliac artery.
- i. The marginal artery of Drummond
 - i. lies in the concavity of the colon
 - ii. An important collateral channel between the superior and inferior mesenteric arteries.
 - iii. It can maintain the viability of along segment of the colon after division of major colic branch. this allows colon bypass operation to be feasible
- j. Distal colon and the rectum are supplied by the nervi erigentes from S 2, 3, 4.
- k. Laterally the rectum is attached to the pelvis by Lateral ligaments which contain the middle rectal arteries.
- l. Rt and Lt middle rectal arteries arise from internal iliac A and run medially in lateral rectal lig.
- m. Rt and Lt infer. rectal A arise from pudendal A & cross ischiorectal fossa to reach anal canal

3. Surgical physiology

- a. Main function of the small bowel is absorption.
- b. Small intestine has important secretory & digestive functions through the succus entericus.
- c. Absorption of water and sodium to concentrate waste products, this is mainly a function of the right side of the colon
- d. left side of the colon acts as a reservoir for solid feces until the time of defecation
- e. Mucus secreted by the mucosa acts as a lubricant.

4. In preoperative rapid bowel preparation

- a. Metchloramide may be given to inhibit vomiting in rapid bowel preparation.
- b. Antibiotic prophylaxis given immediately before surgery and are continued for one day.
- c. Regimen is Cephalosporin or aminoglycoside with either metronidazole or clindamycin.

5. Intestinal trauma

- a. Colonic injuries are more dangerous because of the magnitude of intra-abdominal contamination.
- b. Iatrogenic injury of duodenum may be injured during an attempt at endoscopic sphincterotomy.
- c. The colon may be injured with colonoscopic diathermy excision of polyps.
- d. Intestine may be injured during laparoscopic surgery when the needle is introduced in an area where the intestine is adherent to the abdominal wall.
- e. Types of injury
 - i. contusion and hematoma,
 - ii. rupture which may be complete or incomplete and single or multiple,
 - iii. Tears of mesentery or mesenteric vessels leading to gangrene of affected bowel segments.
- f. Local signs
 - i. lost liver dullness is present due to free air in the peritoneum,
 - ii. Shifting dullness because of free intraperitoneal fluid,
 - iii. Distension due to developing ileus.
 - iv. Frank picture of peritonitis may be delayed in patients with a tiny perforation
- g. Whenever in doubt, it is better to keep patient under observation in hospital for 24 hours.
- h. The diagnosis of bowel injury is mainly based on clinical grounds. Investigations are only resorted to in doubtful cases.
- i. All intestinal injuries require laparotomy
- j. In small intestine & right colonic ischemia, Restoration of intestinal continuity by primary anastomosis is the rule.

6. intestinal fistulae

- a. A Low-output fistula discharges less than 500ml/day.
- b. A high-output fistula discharges more than 500ml/day.
- c. The amount of fistula output has an important bearing on its metabolic effects.
- d. Sepsis is the major problem in patients with intestinal fistulae.
- e. Skin protection should start as early as the fistula is recognized.
- f. Skin protection by an adhesive cover and a disposable collection bag applied to the skin. This allows the effluent can be measured
- g. Parenteral nutrition is instituted for patients with high output or proximal fistulae.
- h. Patients with low output and distal fistulae can make use of their intestine for absorption; enteral nutrition is indicated.
 - i. The aims of investigations are to detect

- ii. the level of the fistula ,
- iii. the presence of bowel disease,
- iv. the presence of distal obstruction
- v. the presence of intraperitoneal sepsis
- i. Abscess should be drained either surgically or aspirated under U/S or CT guidance.
- j. Continued conservative treatment with nutritional support is indicated in patients showing progressive diminution of the output; this is successful in most cases.
- k. Total discontinuity of the bowel ends is an indication for surgical intervention.
- l. Mucocutaneous continuity is an indication for surgical intervention.

7. Intestinal diverticulae

- a. A diverticulum is a blind pouch that is continuous with the lumen of a hollow viscuss.
- b. Meckel's diverticulum **2-3 rule as an approximation**
 - i. It occurs in 2-3 % of the population.
 - ii. It is situated in the ileum 2-3 feet from the caecum.
 - iii. It averages 2-3 inches in length.
 - iv. Symptoms are due to complications, which occur in about 2-3% of affected people.
- c. Intestinal obstruction is the commonest complication of Meckel's diverticulum .
- d. Bleeding 2ry to Meckel's diverticulum is commonest cause of lower GIT bleeding in children.
- e. Diverticular disease of the colon
 - i. Tender mass in the left iliac fossa has to be differentiated from carcinoma.
 - ii. In carcinoma, the history is of a short duration and pain is absent in 25% of cases.
 - iii. Carcinoma of the colon is a commoner cause of bleeding per rectum.
 - iv. Bleeding may be the first presentation of the disease.
 - v. The diagnosis of the source of bleeding in patients with profuse haemorrhage may be a difficult problem as it is difficult to perform colonoscopy in this situation.
 - vi. C.T reveals thickening of colonic wall, peri-diverticular abscess or extraluminal gas.
 - vii. A colo-vesical fistula presents by cystitis, faeculuria and pneumaturia.
 - viii. This fistula treated by resection of the affected segment & closure of bladder wall.

8. Ulcerative colitis

- a. Pyoderma gangrenosum, erythema nodosum & uveitis are possible complication .
- b. Toxic megacolon
 - i. Possible complication in 2-5% of cases.
 - ii. Patient is very toxic, severe pyrexia. It can be fatal.
 - iii. Patient is suffered from severe incessant diarrhea with passage of blood.
 - iv. Patient is suffered from severe distension due marked colonic atony.
 - v. Barium enema is contraindicated.
 - vi. Endoscopy is contraindicated.
- c. Proctocolectomy with distal rectal mucosectomy is not suitable in an emergency sitting.

9. Crohn's disease

- a. Microscopically, there is non-caseating granulomatous infiltration of the lymphatics of the submucosa with the presence of giant-cells.
- b. Surgery is reserved for complications of the disease, but ultimately becomes necessary in most of cases.
- c. Unlike crohn's disease, abscess & fistula formation are rare in Intestinal T.B.
- d. Untreated Intestinal T.B., intestinal obstruction supervenes.

10. Surgical complications of typhoid and paratyphoid

- a. *Ulceration*; The ulcer is parallel to the long axis of the gut.
- b. *Intestinal hemorrhage*;
 - i. Result from ulceration of the affected peyer's patches in the lower ileum.
 - ii. Usually occurs 2-3 weeks after the onset of the disease.
 - iii. Usually presents as passage of dark blood per rectum (may be bright red if is profuse).
- c. *Perforation*;
 - i. It needs urgent exploration under cover of chloramphenicol. Pus is evacuated,
 - ii. Either the perforation is closed or the diseased ileal segment is resected.

11. Chronic intestinal ischemia

- a. Caused by narrowing of the superior mesenteric artery (SMA), and sometimes the celiac artery.
- b. Rarely the celiac axis is compressed by the median arcuate ligament of the diaphragm.
- c. The patient is usually afraid to eat, and therefore loses weight.
- d. An upper abdominal bruit is heard in the majority of patients.
- e. Investigations is needed to exclude other cases of chronic abdominal pain
- f. Aortography is diagnostic, particularly the lateral view.
- g. CT-angiography is non-invasive and provides a 3D image.

Additional notes

- h. Median arcuate ligament compression is treated by division of the ligament.

12. Acute intestinal ischemia

- a. Regarding mesenteric arterial embolism, the embolus usually lodges within few centimeters of the mouth of the sup mesenteric A, sparing the middle colic and a few of the upper jejunal branches.
- b. Regarding mesenteric arterial thrombosis
 - i. The patient usually give history of intestinal angina.
 - ii. The extent of ischemia is more than that with embolism as the block is at the mouth of SMA sparing none of its branches.
 - iii. Embolism is slightly better prognosis than thrombosis.
- c. Regarding mesenteric venous thrombosis
 - i. The condition is sometimes idiopathic.
 - ii. It may be associated with portal hypertension, intra-abdominal sepsis, Hypercoagulable states and Intake of Contraceptive pills.
 - iii. It is diagnosed at the operation by presence of mesenteric edema & by extrusion of clots when the mesenteric veins are cut.
 - iv. Gangrenous intestine is resected
 - v. Postoperatively, heparin is given. The patient discharged to home under the cover of oral anticoagulants for at least 3 months.

13. Non-occlusive intestinal ischemia

- a. There is no block to the mesenteric vessels, yet some of these patients have atherosclerotic narrowing.
- b. The most sensitive layer to ischemia is the mucosa.
- c. Pain responds neither to narcotics nor to nasogastric aspiration.
- d. There is no specific test to prove the diagnosis.
- e. The most useful aid is to bear the condition in mind, particularly in atherosclerotic or patients with cardiac arrhythmia.
- f. Serum amylase is elevated in half of patients, but is not as high as in acute pancreatitis.
- g. If the arteriographic findings are diagnostic of SMA embolism, preoperative infusion of papaverine directly in the artery improves the intestinal viability.
- h. Urgent surgery is the key to survival.

14. Ischemic colitis

- a. Plain X-ray shows "thumb-prints" due to oedematous mucosa outlined by bowel gas.
- b. Treatment is supportive by I.V fluids, analgesics and antibiotics.
- c. Surgery is seldom required for gangrene or for stricture formation.

15. Colorectal tumors

- a. Regarding solitary adenoma of colon, Villous adenoma carries highest risk of malignancy (40%).
- b. The incidence of malignancy is highest with Villous adenoma that are bigger than 2cm.
- c. Familial polyposis coli,
 - i. Affect males more than females.
 - ii. The commonest site is the sigmoid colon & rectum.
 - iii. The malignant potential is related to the size & type of the adenoma.
 - iv. Avoidance of an ileostomy encourages the asymptomatic person to have the operation.
 - v. Genetic screening of relatives is nowadays performed.
- d. Carcinoma of the colon and rectum
 - i. Most colorectal cancers have an established genetic basis.
 - ii. Biopsy from a high tumour can be obtained by the colonoscope.
 - iii. MRI & endorectal U/S can assess the depth of invasion of rectal cancer.

16. Regarding intussusception, hydrostatic reduction;

- a. In early cases a trial of hydrostatic reduction is performed.
- b. The pressure should not exceed 120cm of water.
- c. Success of reduction is confirmed by the free flow of barium into the small intestine for more than 5cm and by prompt clinical improvement with no further colics.
- d. The baby should be kept under observation for 24 h.
- e. Success rate is 75-95%

17. Intestinal obstruction

- a. Regarding Strangulated hernia, surgery is started because of late presentation.
- b. Regarding adhesive I.O, conservative ttt shouldn't be prolonged if there is no response in 48h.
- c. Regarding paralytic ileus,
 - i. Some degree of bowel atony follows abdominal operations for 24-48h.
 - ii. Paralysis that extends beyond the 3 days deserves a search for other causes.
 - iii. The duration depends on the bowel manipulation, the irritation e.g. Blood, urine, pus
 - iv. Tetracycline antidepressants in large dose may be a cause.

- v. In resistant cases, a parasympathomimetics may be useful.

18. Rectal prolapse

- a. The exact pathophysiology of complete rectal prolapse is still unknown but, many Theories are suggested
 - i. Failure of rectal support by the levators and pelvic fascia
 - ii. May represent a sliding type of hernia
 - iii. Abnormal mobility of mesorectum leading to lack of fixation between the rectum & sacrum
 - iv. Pelvic floor denervation secondary to repeated childbirth
 - v. Prolapse is due to intussusception which starts at about 10cm from the anal verge
 - vi. In Egypt Bilharzial proctitis and colitis may be a predisposing cause
- b. A degree of fecal incontinence is a common symptom with complete rectal prolapse and this may be distressing symptom that urges the patient to seek medical advise
- c. Treated by
 - i. Manual reduction by the mother after defecation followed by strapping of the buttocks to prevent prolapse.
 - ii. The mother is advised to postpone training the child to defecate in the potty
 - iii. Submucous injection of 5% phenol in almond oil as for hemorrhoids, is done in resistant cases
- d. Various surgical procedures for treatment of complete prolapse; Rectopexy, Excision of the redundant rectum, Delorm's operation and Narrowing of the anus is reserved for the frial patient who is judged unable to stand a major surgery

Pediatric surgery

1. Regarding full term babies

- a. Daily fluid maintenance is given in the formula of 10% glucose in 0.18 percent saline.
- b. Potassium chloride (20 mmol/L) is added once urine flow is established
- c. Number of mmol $\text{HCO}_3^- = \text{Base deficit} \times \text{WT in Kg} / 3$; it is a simple formula to estimate the amount of bicarbonate needed to infuse in the 1st instance in the common condition of metabolic acidosis.
- d. Three blood-stained swabs during surgical operation will contain 30 ml of blood which constitute 10% of the total blood volume.
- e. The lung has sufficient capacity for postnatal survival at about 24 weeks gestation.
- f. After delivery, the lung matures rapidly but only about half of the alveoli present at birth.
- g. The most energy consuming activity of the neonate is breathing.
- h. Respiratory failure develops rapidly in babies with pneumonia.
- i. Full term babies cannot withstand starvation more than 6h without running the risk of hypoglycemia.
- j. If the baby cannot tolerate enteral feeding for more than a week, T.P.N is mandatory.
- k. Morphine is given to adults in a dose of 0.2 mg/kg, but in the small infant 0.1 mg/kg 6-8h is enough.

2. Regarding congenital diaphragmatic hernia

- a. The incidence is 1-4000.
- b. Fusion of the septum transversum and the pleuroperitoneal folds occurs bilaterally during the 8th week of the intrauterine life.
- c. The intestine returns into the abdomen for rotation and fixation at the 10th week.
- d. If the diaphragmatic development is incomplete by the 10th week, the pleuroperitoneal hiatus persists & intestinal loops may herniated into the chest resulting in post. diaphragmatic hernia.
- e. Maternal polyhydramnios raises suspicion.
- f. Mild cases may present late by recurrent chest infections or by accidental auscultation of bowel sounds on the chest.
- l. Should be DD from other causes on neonatal respiratory distress e.g Esophageal atresia, hyaline membrane disease and Esophageal atresia.

3. Regarding esophageal atresia

- a. Male are affected more the females.
- b. The condition is more common in white than black race.
- c. Regarding catheter test, if the catheter arrested at 10cm, this denotes esophageal atresia.
- d. Regarding Pre-operative care
 - i. Oral feeding is prohibited, but gives IV fluids and antibiotics.
 - ii. Continuous low pressure suction of saliva.
 - iii. The infant is Kept in incubator.

4. Regarding CHPS

- a. The incidence is 1-400.
- b. The following factors may have a role in aetiology
 - i. Improper innervations of the pyloric sphincter.
 - ii. Reduce nitric oxide synthesis
 - iii. Increased growth hormone level
- c. In 10 % of cases, the infant have hematemesis due to gastritis or esophagitis.

Additional notes

- d. Olive like mass is felt at the trans-pyloric plane to RT to the RT rectus muscle.
(Better, when the stomach is empty)
- e. By U/S the condition is diagnosed if the thickness of the pyloric muscle is more than 4mm.
- f. Regarding *Ramstedt pyloro-myotomy*,
 - i. The abdomen is entered through a small transverse RT upper abdominal incision.
 - ii. Oral feeding can be resumed few hours after the operation.

5. Hirschsprung's disease (aganglionic megacolon)

- a. The incidence is 1-5000, M:F 4:1
- b. Familial incidence in 6% of cases.
- c. The affected segment of the bowel is spastic and narrowed.
- d. The normally ganglionic colon proximal to it is markedly dilated.
- e. Plain abdominal x-ray reveals large bowel obstruction.
- f. The diagnostic accuracy of the barium enema is 80%.
- g. The ano-rectal manometry reveals failure of relaxation of the anal sphincter in response to rectal distension.

6. Anorectal malformations

- a. The incidence is 1-5000
- b. M:F.... in high anomalies 2:1
- c. M:F.... in low anomalies 1:2
- d. If there is an impulse on crying at the site of the anus, it denotes a low anomaly.
- e. If a thermometer can be introduced into the anus for more than one cm, this excludes rectal atresia.
- f. Regarding invertogram,
 - i. The distance between the radiopaque mark and the distal gas shadow is measured.
 - ii. If the distance is more than 1cm, this denotes high anomaly,
 - iii. If the distance is less than 1cm, this denotes low anomaly.
 - iv. while is less than 1cm a low anomaly diagnosed
- g. If meconium is present in Urine, it denotes a fistulus communication to the bladder.

7. Regarding common tumors in different age groups

- a. Neonatal period
 - i. Ovarian cyst lesion
 - ii. Metastasizing neuro-blastoma
 - iii. Sacro-coccygeal Teratoma
- b. In 1st 2 years of life, Neuro-, Nephro- and Hepato-blastoma are commonest tumors.
- c. Between 2-6 years,
 - i. Rhabdomyo-sarcoma of the bladder and prostate.
 - ii. Ovarian Teratoma.
 - iii. Malignant lymphoma.

Anal canal

1. Regarding anal canal

- a. Though the anal canal is a site of porto-systemic anastomosis, the incidence of pile in cases of portal hypertension is equal to that of normal population.
- b. The internal sphincter
 - i. is a visceral muscle.
 - ii. is a major determinant of anal continence
 - iii. Spasm in it plays a role in the pathology of the anal fissure and peri-anal suppuration.
- c. The external sphincter is somatic muscles
 - i. attached posteriorly to the coccyx
 - ii. inserted anteriorly in the mid-perineal point in males and in sphincter vaginae in females
 - iii. Innervated through S 2, 3, 4.
 - iv. Only 20% of resting pressure is due to the external sphincter.
 - v. division of this sphincter during fistula surgery results in a minor functional disability
- d. The integrity of the anorectal ring is of a paramount importance in anal continence.
- e. The anorectal ring is composed of
 - i. The pubo-rectalis part of levator ani.
 - ii. The upper parts of internal and external anal sphincter
 - iii. The longitudinal muscle layer

2. Regarding Pilonidal sinus

- a. It is not an anal disease.
- b. It Possible misdiagnosed as an anal fistula.
- c. The condition seldom develops after the age of 30 years

3. **Regarding anal fissure**

- a. The higher percentage of anterior fissure in females can be explained by the lack of support to the lining due to relaxation or tearing of the perineum during delivery.
- b. In any patient with atypical presentation of the anal fissure, histo-pathological examination of the excised specimen should be performed.
- c. Treatment is essentially medical but surgery is sometimes needed.
- d. Recently, glycerol tri-nitrate ointment 0.2% or bethanecol ointment 1% has been successfully used
- e. Frequent warm water baths have a soothing effect.

4. **The anal cushions**

- a. Normally the terminal branches of the sup. hemorrhoidal vessels form a sort of a vascular plexus beneath the epithelial lining of the anal canal called the anal cushions.
- b. These Cushion are usually arranged at 3,7,11 o'clock position.
- c. It plays an important role in the normal continence mechanism.
- d. Congestion, enlargement and prolapsed of these cushions constitutes hemorrhoids.

5. **Piles**

- a. The internal hemorrhoidal plexus
 - i. It is above the dentate line.
 - ii. If affected of produces internal hemorrhoids they are covered by mucous membrane and are bright red or purple in color.
- b. Affection of the external hemorrhoidal plexus which below the dentate line produces external hemorrhoids they are covered by skin
- c. Bleeding per-rectum is the most common complain,
 - i. at the end of defecation,
 - ii. fresh bright red, drops or jet that are separate from stool
- d. Injection sclerotherapy
 - i. does not need anesthesia
 - ii. If the injection is deep to sub-mucosa, may lead to Haematuria
- e. Urine retention after many anal operations
 - i. It is a common problem especially in elderly males.
 - ii. Conservative measures are tried at first.
 1. analgesic for pain
 2. anal pack is removed ,
 3. patient is asked to get out of bed
 4. a warm bath is advised
 5. injection parasympathomimetic drug as carbachol
 - iii. If these measures fail , catheterization is advised
- f. Two weeks post-operatively a digital rectal examination is performed to check that there is no tendency to stenosis. if present ,gradual anal dilation is started
- g. Recurrence is liable to occur in young patients and is usually due to enlargement of daughter piles. Injection treatment is advised.

6. **anorectal abscess**

- a. Infection of the apocrine glands or the hair follicles is the aetiology in 15-25% of cases.
- b. The causative organisms are usually staphylococci.
- c. there is no communication with the anal canal.

7. **Regarding anal malignant tumors, biopsy is essential before institution of treatment.****REVIEW SUBJECTS**1. **abdominal injuries**

- a. blunt abdominal injuries
 - i. common site are the renal pedicle, D-J flexure, ileocecal area & the neck of pancreas.
 - ii. sudden compression of the abdomen may also cause laceration of the liver or spleen.
- b. Regarding penetrating abdominal injuries, the severity of injury with gunshots is determined by **kinetic energy** $= MV^2/g$
- c. The following are contraindications for DPL
 - i. pregnancy
 - ii. liver cirrhosis
 - iii. sever obesity
 - iv. prior abdominal surgery
 - v. evidence of intra-abdominal injuries
- d. There is now a growing tendency to treat many patients with hepatic and splenic injuries conservatively.

2. **bleeding per-rectum**

- a. spontaneous remission rate is 80%
- b. no source off bleeding can be identified in 12% of cases
- c. bleeding is recurrent in 25% of cases

Additional notes

- d. lower GIT bleeding is more difficult to diagnose than upper GIT
- e. rigid sigmoidoscope can reach up to **30** cm from the anal verge
- f. fibro-optic sigmoidoscope
 - i. can reach up to **70** cm from the anal verge
 - ii. can diagnose most of lesion in the rectum, sigmoid and descending colon.
- g. colonoscopy
 - i. can visualize the whole of the colon
 - ii. it needs proper preparation of the colon by repeated enemas before the procedure
 - iii. is the investigation of choice for chronic blood loss.
 - iv. angiography is performed when colonoscopy cannot be performed because of massive bleeding or when colonoscopy cannot pinpoint the source of bleeding

REVIEW SUBJECTS

1. diagnostic laparoscopy rapidly gaining popularity in the certain situation

- a. Determination the cause of the lower abdominal pain
- b. Determination of the extent of malignant disease
- c. in blunt abdominal trauma to detect the exact injuries

2. Regarding disease of the umbilicus

- a. Biliary fistula at umbilicus is rare & may be due to operative bile duct injury during cholecystectomy
- b. Umbilical polyp is due to persistence of the umbilical extremity of the vitello-intestinal ducts
- c. Umbilical Granuloma should be curetted and then cauterized by silver nitrate
- d. Umbilical stone
 - i. may form due to chronic inflammation of the umbilicus or from umbilical granuloma
 - ii. The stone should be removed, the granuloma should be excised by diathermy
 - iii. Antiseptics is applied

3. Hernia

- a. Richter's hernia is common type in femoral hernia
- b. By trans-illumination, hernia is opaque except in infants
- c. Weak abdominal muscles presents by either;
 - i. Multiply of hernia & divercation of recti.
 - ii. bulge of the lower abdomen on straining (Malbigian bulge)
- d. Irreducibility without other symptoms of obstruction is almost diagnostic of an omentocoele.
- e. There is usually hernia in obese elderly man.
- f. Transversalis fascia is the most important defense against hernia formation.
- g. Although it is a thin layer, is a strong layer that supports the posterior wall.
- h. Contracture of transversalis muscle pulls and tenses the edges of the internal ring
- i. Regarding sliding Hernia
 - i. Don't try to dissect the sliding viscus from the sac to avoid devascularized viscus.
 - ii. Free the sliding sac and viscus well from the surrounding structures and push them back behind the transversalis fascia which is then repaired
- j. In most of the patients with recurrent inguinal hernia, the recurrence will be in the medial end of the repair and will present as a direct inguinal hernia.
- k. Regarding inguinal hernia in infants
 - i. Operation can be performed at any age provided a skilled anesthetist is available.
 - ii. the operation can be performed through the external ring without the need to open the inguinal canal
 - iii. Recurrence is rare and is due to failure to ligate the sac at the proper neck.
 - iv. If strangulation is neglected, testicular atrophy may occur
- l. Regarding direct inguinal hernia
 - i. For an elderly patient with small hernia, operation is not needed
 - ii. Herniotomy is not usually needed as the sac is small and is composed mainly of extra-peritoneal fat
 - iii. Repair of the weak posterior wall of the inguinal canal by plication of fascia Transversalis and mesh hernioplasty is indicated

4. Femoral hernia

- a. regarding femoral canal
 - i. It is about 1/2 inch long.
 - ii. Its function is to give a space for expansion of the femoral vein
- b. femoral hernia is covered by
 - i. stretched femoral septum
 - ii. Transversalis fascia from the anterior wall of the canal
 - iii. Cribriform fascia, Superficial fascia and Skin

- c. A truss is contraindicated because of the possibility of strangulation
- d. Surgery is the only the line of treatment
- e. During repair of a femoral hernia, the surgeon should be aware that femoral vein on the lateral side and the urinary bladder on the medial side.

5. Umbilical hernia

- a. Adult umbilical hernia is usually seen in patients with ascitis
- b. Regarding Infantile umbilical hernia
 - i. The defect is exactly at the umbilicus
 - ii. The umbilical scar is stretched and is present at the top of the hernia.
 - iii. Reassurance of the parents and follow-up are the usual measures
 - iv. The defect closes spontaneously within two years in most of the cases
- c. Regarding paraumbilical hernia
 - i. Occasionally the defect is below the umbilicus. It is never lateral to it.
 - ii. Surgery is the only method of treatment
 - iii. A truss is not satisfactory because the hernia is usually irreducible and its use carries a high risk of strangulation

URINARY TRACT

1. Diagnosis of UTI

- a. Oliguria is urine volume less than 400ml/24h in adults.
- b. Anuria is urine volume less than 200ml/24h.
- c. Regarding Chyluria,
 - i. passage of white milky urine due to presence of lymphatic fluid or chyle
 - ii.
 - iii. It represents a lymphatic urinary fistula due to obstruction of renal lymphatics
 - iv. Urine clears with adding ether
 - v. Adding sudan3 gives an orange coloration
 - vi. Caused by filariasis, TB, retroperitoneal tumors and trauma
- d. Regarding Turbid urine
 - i. due to phosphaturia. That precipitates in alkaline urine
 - ii. Adding drops of acetic acid clears the turbidity
 - iii. Infection can makes the urine turbid and malodorous
- e. Necrotouria is pathognomonic for bladder carcinoma
- f. Peumatouria it strongly suggests presence of fistula between the urinary tract and the bowel that is caused by cancer colon, chron's disease and colonic diverticulum

2. What you with digital rectal examination (DRE)

- a. Anal sphincter tone, Walls of anal canal & rectum and Prostate.
- b. Metastatic deposits in recto-vasical or recto-urine pouch.

3. Investigations for UTI

- a. Regarding Infusion urography.
 - i. Indicated in patients with impaired renal function where IVU will not show up due to lack of secretion of contrast medium
 - ii. Done only if blood urea is less than 100mg/100ml and contraindicated if more than this.
- b. Voiding cystography indicated to delineate bladder pathology or to diagnose vesico-uretric reflux by taking films during voiding.
- c. Renal arteriography
 - i. it is indicated for the diagnosis of renal artery stenosis and renal tumors and
 - ii. It is indicated for kidney donors before transplantation.
 - iii. Done by selective catheterization of renal artery by a cannula through the femoral artery using seldinger technique
- d. The main value of CT and MRI is in the diagnosis & staging of genitourinary neoplasm
- e. Regarding Haematuria
 - i. Painless Haematuria without other symptoms must be regarded as a symptom of tumour until prove otherwise.
 - ii. The most common causes are
 - 1. senile prostatic hyperplasia
 - 2. urinary stone,
 - 3. UTI,
 - 4. renal tumors
 - 5. bladder tumour
 - 6. Bilharziasis

4. Congenital anomalies of urinary tract ,Development ;

- a. The bladder develops from the urogenital siuns, allantois and wolffian ducts. The latter form the trigone, ejaculatory ducts and vase differentia.
- b. The whole urethra in female and post urethra in males are formed from the urogenital siuns

- c. Anterior urethra in males are formed from the inner genital folds
- d. The glandular urethra develops by invagination of epithelium from the tip of glans penis

5. Horseshoe kidney

- a. It is prone to disease because uretric obstruction may results from angulation of the ureter as it crosses renal isthmus.
- b. Stasis favor infection and stone formation
- c. A very serious mistake is of excise this undiagnosed mass in exploratory laparotomy
- d. Before excising such mass always, check for the presence of the kidney by U/S or by IVU.
- e. Division of the isthmus of the kidney is rarely required

6. bladder Exstrophy

- a. Exstrophy epispadias complex is due to failure of cloacal membrane to be reinforced by ingrowth of mesoderm. Resulting in a ventral defect of urogenital sinus & overlying skeletal system.
- b. Pronounced widening of symphysis pubis, which is connected by an intersymphyseal band.
- c. This leads to a characteristic waddling gait when the child begins to walk.
- d. Distorted pelvic anatomy may contribute to varying degrees of anal incontinence and rectal prolapsed.
- e. The testes frequently appear undesended although most are actually retractile
- f. In females clitoris is cleft and there may be associated vaginal anomalies
- g. The most important factor is early management
- h. Exstrophy can now be diagnosed in utero by the characteristic U/S picture of a low set umbilicus and repeated failure of the bladder to fill

7. Hypospadias

- a. Positive family history is in 8% of cases.
- b. 10% of patients have inguinal hernia or undescended testes.
- c. 8% of patients have upper urinary tract anomalies.
- d. Patients with posterior hypospadias may have a problem with sex differentiation.
- e. Ultrasound examination is needed to detect upper urinary tract problems.

8. Epispadias

- a. Granular epispadias is not associated with incontinence.
- b. Penile epispadias is associated with incontinence in 75% of cases.
- c. penopubic epispadias is associated with incontinence in 95 % of cases.
- d. Females with epispadias have a bifid clitoris, separation of libia and most of them are incontinent

9. Renal injuries

- a. Rapture of the whole renal vascular pedicle causes massive bleeding & is an emergency.
- b. Its degree is not necessary proportionate to the severity of the injury.
- c. Haematuria is usually noted with the 1st voiding but may be late to appear due to hypotension.
- d. Haematuria may be continuous or intermittent.
- e. About 30% of renal vascular injuries are not associated with haematuria.
- f. Renal pedicel injury is 5% of all renal injuries.

10. Uretric injuries

- a. Management of uretric injuries is essentially surgical.
- b. Its management depends upon the extent & site of the injury and the time of presentation.
- c. The principles of repair are
 - i. Debridement and tension free spatulated anastomosis.
 - ii. Water tight closure.
 - iii. uretral stenting and drainage.
- d. Urinary diversion by a percutaneous nephrostomy and postponing uretric reconstruction is safest procedure in unfavorable circumstances.

11. Urinary bladder injuries

- a. Most commonly from external forces.
- b. Frequently associated with pelvis fractures.
- c. It is either extra peritoneal (80%) or intra peritoneal (20%).
- d. Sometimes both injuries are present.
- e. Small extra peritoneal rupture with minimal extravasations on cystogram may be treated with Foley catheter for 2 weeks until healing occurs.
- f. Large extra-peritoneal rupture and intra peritoneal rupture need repair.

12. Regarding to anterior urethral injuries

- a. These are more common in men and are rare in women.
- b. Bulbous urethral injuries are more frequent than that of pendulous penile part.
- c. Bar of the bicycle is common cause thus crushing the urethra against the pubis.
- d. Contusion of bulbous urethra usually need no treatment

- e. An expanding hematoma of the perineum or infected urine extravasations requires incisions and drainage.

13. Regarding to posterior urethral injuries

- a. Membranous urethral injuries are more frequent than that of the prostatic part.
- b. Types:
 - i. Mucosal tear and false passage are caused by faulty instrumentation.
 - ii. Laceration of a part of the circumference.
 - iii. Complete circumferential laceration with torn puboprostatic ligament (Urinary bladder and prostate are thus free of any fixation and float upwards leaving a gap between the torn ends of urethra)

14. Regarding urological injuries

- a. Treatment of renal injuries is mainly conservative.
- b. Most of uretric injuries are iatrogenic following difficult surgical or endoscopic procedure.
- c. Bilateral uretric ligation will lead to anuria.
- d. The best way to avoid intra-operative uretric injuries is to do preliminary exposure of the ureters.
- e. Bladder or Urethral injuries should be suspected in patient with pelvic injuries.
- f. Extra pelvic injuries of the urethra is diagnosed by the triad of
 - i. perineal swelling,
 - ii. retention of urine,
 - iii. Few drops of urine at the external meatus.
- g. Catheterization is contraindicated in patient with rupture urethra; the best way is to do supra pubic cystostomy.

15. Regarding UTI

- a. Regarding pyelo-nephritis, Ultrasound is needed to pick up obstructed cases with dilatation of the pelvis and calyces.
- b. A perinephric abscess usually affects the adults, more on the right side.
- c. Regarding urinary Bilharziasis,
 - i. Bilharzial sandy patches tends to form a barrier to the passage of the ova, so normal urine does not mean a cure of the disease.
 - ii. By Plain radiography, Seminal vesicles have honey comb pattern.

16. Regarding hydronephrosis

- a. Calyces are the 1st to suffer from obstruction.
- b. Regarding hydronephrosis of pregnancy, especially on the right side,
 - i. Dilatation occurs during the 1st few weeks & reaches maximum between 5 & 6th months.
 - ii. It is due to atony of ureteric musculature due to high progesterone level.
 - iii. the foetal head may press both ureters.
 - iv. The condition subsides within 2-12 weeks after delivery.
- c. IVU shows;
 - i. Pelvi-uretric junction is distorted and is raised upwards.
 - ii. Loss of cupping, clubbing and later ballooning of the minor calyces.
 - iii. The major calyces are dilated.
- d. If IVU does not give conclusive data, ascending pyelography is indicated to confirm the diagnosis and to see the cause.
- e. Descending pyelography is sometimes done if a nephrostomy tube is present.
- f. Only when all the following criteria are present, nephrectomy is justified
 - i. The kidney is not functioning with infusion urography,
 - ii. Sonography showed very thin parenchyma,
 - iii. Renal scan shows zero function,
 - iv. The opposite kidney is normal.

17. Regarding urinary stones

- a. Excess urinary excretion of calcium results from hyperparathyroidism, Prolonged immobilization or may be Idiopathic.
- b. Excess urinary excretion of uric acid results from Gout, purine rich food or chemotherapy for leukemias and lymphoma.
- c. Excess urinary excretion of oxalates may be due to
 - i. Idiopathic hyperoxalluria
 - ii. Excess dietary intake of strawberries, green and tea
 - iii. Loss of terminal ileum by resection or Crohn's disease
- d. Two thirds of patients have one or more recurrence within the following 8 years
- e. Vitamin A deficiency is rare but cause hyperkeratosis of urothelium. the epithelial debris also acts as nidus for stone formation.

- f. Ammonium magnesium phosphate calculi (15%) form in foul decomposing alkaline urine and grow very rapidly.
- g. Pelvi-uretric junction, Pelvic brim, Uretero-vasical junction are common sites for the stone impaction.
- h. Hematuria may occur with an attack of ureteric colic. It may be gross or microscopic and is caused by mucosal injury during stone migration.
- i. Patient is restless because of inability to obtain relief irrespective of position.
- j. IVU is mandatory in all cases of urinary stone.

18. Regarding treatment of renal colici

- a. Most cases of are treated as outpatient.
- b. Hospitalization may be required for patient with severe colic specially with persistent vomiting

19. Regarding treatment of renal calculi

- a. ESWL procedure is performed without anesthesia except in children
- b. If required for a stone in a solitary kidney, stenting of ureter by catheter is mandatory to avoid acute obstruction by fragments which may cause acute renal failure.
- c. PCNL is indicated for cystine stones because they are very hard for ESWL
- d. Open surgery is the third choice for treatment for renal stone
- e. Only 5-10% of patients with renal stone will be candidate for open surgery.
- f. A plain x ray is done on the day of operation in order to confirm position of the stone.
- g. The kidney is exposed by an oblique lumbar incision of Morris.
- h. The kidney is exposed by a muscle cutting incision that starts at the renal angle and is carried downwards and forwards parallel to and about one inch below the last rib.

20. Regarding stones in Lower third ureter

- a. Stones less than 1 cm can be extracted by ureteroscopy.
- b. Stones less than 2 cm can be fragmented or extracted by ureteroscopy.
- c. Stones larger than 2 cm open surgery is required.
- d. Complications of ureteroscopy are uncommon and include perforation, avulsion, stricture of the ureter and infection

21. Regarding treatment of urinary bladder stones

- a. Due to high pressure in the bladder during voiding, stones less than 1 cm have no chance to stay in the bladder unless there is distal obstruction.
- b. Elliot's evacuator is used for cystoscopic litholapaxy.
- c. Complications of cystoscopic litholapaxy include bleeding, injury to the bladder or the urethra and failure to crush the stone.

22. Regarding prevention of urinary stones recurrence

- a. In 24-h urine collection
 - i. Normal value of calcium less 300 mg.
 - ii. Normal value of uric acid less 800 mg.
 - iii. Normal value oxalate of less 40 mg.
 - iv. Normal value citrate: 300-900 mg.
- b. Hydrochlorothiazide 50mg bid aids in the dissolution of calcium oxalate stone.
- c. Citrate 5gm bid inhibits crystallization of oxalates.
- d. Prevention of Uric acid stone recurrence
 - i. Avoid diet rich in purines.
 - ii. Rule out myeloproliferative and neoplastic disease
 - iii. Urine should be kept alkaline
 - iv. Allopurinol 300 mg/day is indicated in patients with hyperuricaemia.
- e. Regarding prevention of ammonium magnesium phosphate stone recurrence
 - i. Aluminum hydroxide orally restricts phosphate absorption.
 - ii. Long-term antibiotic to eradicate UTI.
 - iii. Avoid indwelling catheters.
 - iv. Increasing urine acidity by oral administration of 1 g vitamin C daily.

23. Regarding Calculus anuria

- a. IVU is contraindicated as the patient is critically ill with high blood urea and creatinine
- b. Atrial of forced diuresis during the investigations period is carried out by fixing a urethral catheter and giving 40 mg furosemide in 100 ml saline over 2 h.

24. Regarding BPH

- a. Starts at age of 40 years
- b. To overcome exaggerated normal curve of the posterior urethra, A special curved catheter or instrument can pass to the bladder if needed
- c. Detrusor muscle hyper-reflexia increases frequency of micturition.

- d. Treated by
 - i. Prostatic decongestant supp
 - ii. Alpha blockers; diminish outlet muscle tone in bladder neck and prostatic urethra.
- e. Obstructed uroflow curves are an indication for surgery.
- f. Complication of Surgical intervention include
 - i. Retrograde ejaculation (occurs in more than 90% of cases)
 - ii. Bladder neck fibrosis
 - iii. TURP syndrome (Hypervolemia, dilutional hyponatremia and intra vascular haemolysis). The use of glycine for irrigation avoids this dangerous complication.

25. Regarding hypernephroma

- a. High incidence is associated with Von-hippel lindau disease in which there may be
 - i. Renal and pancreatic cysts
 - ii. Cerebeller hemangioblastomas
 - iii. Retinal angiomas
 - iv. pheochromocytoma
- b. Renal cell carcinoma may be multiple and bilateral

26. Regarding nephroblastoma

- a. It account for 10% of childhood malignant tumors and 80% of all genitourinary cancers in children under 15 years of age.
- b. Anomalies that may be associated with wilms' tumor
 - i. Aniridia in 2% of cases
 - ii. Hemihypertrophy asymmetrical growth of one side of the body on 3% of cases
 - iii. Macroglossia
 - iv. Thirty fold increase in the incidence of neurofibromatosis
 - v. Genitourinary anomalies in 4.4% of cases as renal hypoplasia, hypoplasia or cryptorchidism

27. Regarding Transitional cell carcinoma

- a. Cigarette smoking results in fourfold increase in risk.
- b. Cyclophosphamide results in nine fold increase in risk.
- c. Fourfold increase in risk for developing bladder cancer is notched in women treated by pelvic irradiation for cervical malignancy.
- d. Regarding superficial TCC, 25% of these lesions will later display muscle invasion or subsequent recurrent lesions.

28. Regarding Prostate cancer

- a. Native Asian populations have the lowest incidence.
- b. There is a grading system of prostatic cancer (Gleason's grade) based on the degree of glandular differentiation and growth pattern. Grade 2 is the least malignant while grade 10 is the most malignant
- c. Uretric obstruction occurs in 20% of cases
- d. The obturator lymph node may be also involved
- e. Markedly elevated PSA more than 20 ng/ml suggests disseminated disease.
- f. The serum level of PSA is not affected by rectal examination
- g. Regarding Acid phosphatase,
 - i. It is raised in 70% of patients with extracapsular or metastatic disease.
 - ii. It is raised in many other conditions as Gaucher's disease, Paget's disease of bone and with breast and gastric cancer

29. Regarding treatment of Prostate cancer

- a. Treatment will be dictated by the local extent of the disease, the presence of metastases and general condition of the patient
- b. Complications of radical prostatectomy include urinary incontinence in 5% and impotence in 30% of cases.
- c. Regarding radiation therapy
 - i. Given for locally advanced disease and in unfit patients.
 - ii. External beam radiation therapy is applied giving a dose of 7000cGy over 5 weeks.
 - iii. Its side effects include
 - 1. bladder irradiation that produce frequency of micturation or urgency
 - 2. rectal irritation that produce diarrhea or bleeding rectum
- d. Orchidectomy means excision of the testis with its tunica albuginea together with the epididymis
- e. The disadvantages bilateral orchidectomy are loss of libido and some erectile dysfunction.
- f. Major disadvantage of estrogen therapy is that it predisposes to deep vein thrombosis.
- g. Ethinyle oestradiol may be used for treatment of unfit patients for surgery or radiotherapy.

Test and scrotum**1. Regarding the testes**

- a. Normally the testis reaches,
 - i. The internal inguinal ring at the 6th months,
 - ii. The external inguinal ring at the 8th months,
 - iii. The scrotum just before birth.
- b. A retractile testis is a normal finding in infants and children. It required no treatment.
- c. Hormonal function of the un-descended testes remains normal so that secondary sexual characters develop normally even in bilateral cases.
- d. Torsion testis is uncommon problem occurring usually in adolescents.
- e. Hydrocele of the canal of nuck occurs in a female in relation to the round ligament. It is wholly or partially in the inguinal canal

2. Regarding acute non specific epididymo-orchitis

- a. It is fairly common disease.
- b. Inflammation may subside spontaneously but recurrence is common.
- c. Antibiotic, usually a member of quinolones group, is given for 2-3 weeks
- d. A residual epididymal mass may persist for up to 6 weeks and then resolves spontaneously.
- e. Rest is needed in the first few days.

3. Regarding chronic specific epididymo-orchitis

- a. Epididymis is the primary site of affection in genital TB. The testis usually remains free for a long time, but in neglected cases it may be affected.
- b. Chronic funiculo-epididymo-orchitis may follow acute funiculo-epididymitis or is chronic from the start.
- c. Bilharziasis of the cord
 - i. It occurs as a complication of urinary or intestinal disease.
 - ii. It is a chronic disease from the start.
 - iii. The disease affects the lower part of the cord and the epididymis.
 - iv. The testis and tunica vaginalis are usually normally .

4. Regarding testicular neoplasms

- a. In 10% of cases, there is history of trauma that merely attracts the patient's attention to the presence of a swelling.
- b. Pain is present in 30% of cases.
- c. Lax secondary hydrocele is present in 10% of cases.
- d. Regarding Teratoma, Introduction of combination chemotherapy based on cisplatin has greatly improved its outcome.

5. Regarding chylocele

- a. Chyle accumulates in the tunica due to rupture of distal lymphatic vessels in case of filariasis.
- b. It forms a swelling, which is similar to hydrocele, but is opaque on trans-illumination.

Fracture and dislocations**1. General principles**

- a. For a complete clinical diagnosis of a fracture, the motor and sensory innervations of the limb and the peripheral circulation should be examined to record and treat any injury of nerves or blood vessels.
- b. The management of internal hemorrhage and visceral injury take priority over a limb fracture.
- c. Reduction is not necessary when the displacement is trivial or when the displacement is of a nature that will leave no functional or cosmetic disability.
- d. The early reduction of a fracture before the part gets swollen is preferable.
- e. Reduction is urgent when the fracture is complicated by vascular and nerve injuries.
- f. Accuracy of reduction is desirable in any fracture particularly fractures involving articular surfaces.
- g. Angulation, rotation and overlap are not permissible esp. in the lower limb and forearm.
- h. Partial side displacement is accepted in a transverse fracture of the shaft of a long bone.

2. Regarding fat embolism as complication of fracture

- a. It usually occurs after one day from the time of injury.
- b. In cerebral fat embolism, the patient is drowsy, restless and subsequently may be comatose.
- c. In pulmonary fat embolism, there is cyanosis, frothy sputum or heart failure.
- d. Investigated by examination of the septum and urine for fat droplets
- e. Treated by O₂ mask, heparinization and low molecular weight dextrans

3. Regarding complications of fracture

- a. Prolonged immobilization leads to demineralization of the skeleton with formation of calcium and phosphate urinary calculi. High fluid intake and early mobilization are recommended,
- b. It is essential to check the circulation in the distal part of the limb.
- c. If there is a suspicion of vascular injury, an angiography may be performed.

- d. If an arterial injury is diagnosed open reduction and internal fixation are performed prior to the vascular repair. Venous injuries are also repaired
- e. Mal-union is due to lack of perfect reduction or failure of stabilization.
- f. Mal-union is avoided by open reduction and internal fixation.
- g. Mal-union may lead to cosmetic or functional disability.
- h. Joint stiffness and osteo-arthritis may occur after prolonged immobilization and after intra-articular fractures.

Fracture and dislocations of upper limb

1. Regarding displacement of shoulder joint

- a. The shoulder joint has sacrificed stability for mobility.
- b. In anterior dislocation, humerus passes over the anterior margin of the glenoid and in so doing the posterior part of the articular surface of the head may suffer a compression fracture. Once in its new subcoracoid position, Humerus is locked in this position by muscle spasm.

2. Regarding fracture of the shaft of the Humerus

- a. Twisting injury to the arm producing a spiral fracture with or without a butterfly fragment.
- b. If the radial nerve is injured,
 - i. treatment is expectant because the lesion is usually in continuity and there is full recovery in most cases
 - ii. It is important during treatment to prevent the development of fixed flexion of the wrist and fingers by a combination of a removal cock-up splint and passive mobilization.
- c. Regarding closed reduction methods, Acceptable reduction of these fractures can usually be obtained by gravity acting on the arm and exerting steady traction which tends to correct any angulation and overriding that may occur.
- d. Most of these fractures until easily using these closed methods in approximately 8 weeks.
- e. Alternatively, a hanging cast can be used because it is heavier, the action of gravity becomes more effective. Its disadvantage is that the below elbow cannot be mobilized during treatment

3. Regarding supracondylar fracture of the Humerus

- a. The fracture is greenstick in 50% and complete in 50% of cases
- b. The medial cortex of the distal fragment moves posteriorly relative to medial cortex of shaft of humerus.
- c. On the lateral side of the fracture, the fragments often remain hitched to each other
- d. Medial or lateral shift of the distal fragment may occur.
- e. Fasciotomy is used to relieve an acute compartment syndrome which may occur in the presence of an adequate distal pulse.
- f. Greenstick fracture with angulation more than 20 degree require reduction by flexion only then fixation.
- g. Displaced fracture can be treated by closed reduction and percutaneous pinning.
- h. There are a lot of similarity between fractures of the olecranon and those of the patella.

4. Regarding dislocation of the elbow

- a. The forearm is usually also displaced laterally so that the commonest 80% type of elbow dislocation is postero-lateral.

5. Regarding Monteggia fracture dislocation

- a. Extension type 60%. It consists of anterior angulation of ulna and anterior dislocation of the radial head.
- b. Flexion and lateral types are less common.
- c. Open reduction of radial head and repair of the annular ligament are only done if closed reduction fails.
- d. Posterior interosseous nerve injury is a possible complication.
- e. It may be missed in children. The ulna may not fracture. It may just bend enough to allow the radial head to dislocate.

6. Regarding fractures of the distal radius and ulna

- a. The ulnar styloid process may be avulsed.
- b. In reduction, the assistant grasps the upper arm while the surgeon grasps the injured hand as if shaking hands.

7. Regarding fractures of scaphoid

- a. This fracture does not always produce obvious clinical and radiological signs.
- b. It is often missed and wrongly diagnosed as a "sprained wrist". The wrist is then treated with strapping and as a result the fracture may not unite.

8. A fall on the out stretched hand produces one of the following common fractures

- a. Clavicle fracture.
- b. Supracondylar fracture in children.
- c. Posterior elbow dislocation.
- d. Colles fracture in the elderly.
- e. Scaphoid fracture

Fracture and dislocations of pelvis & lower limb**1. Regarding fracture of the neck of femur**

- a. Trochanteric fracture occurs most frequently in the elderly and best treatment is to do internal fixation by a dynamic hip screw.
- b. Trochanteric fracture in young person may be treated by immobilization and traction to limb.
- c. Sub-trochanteric fractures are treated by internal fixation by plate and screws.

2. Regarding intra-condylar fracture of femur

- a. It takes the shape of T or Y fracture.
- b. Mechanism of injury
 - i. indirect violence (a fall from height)
 - ii. direct violence due to a blow to the anterior aspect of the flexed knee which drives the patella backwards, splitting the two femoral condyles from the femoral shaft.
- c. Fracture is liable to be followed by osteo-arthritis.
- d. The best line of treatment is open reduction and internal fixation by screws.

3. Fracture-separation of lower femoral epiphysis

- a. In an adolescent the femoral epiphysis may be displaced.
- b. Popliteal artery may be injured by the lower femur.
- c. Interference of growth sometimes occurs.
- d. Displacement is corrected under general anesthesia and the position is maintained in plaster of paris for 6 weeks.

4. Displaced transverse Fracture of patella is treated by internal fixation using wires.**5. Regarding meniscus tears**

- a. It commonly affects foot-ball players when weight is being taken on the flexed knee and there is a twisting strain.
 - b. Meniscus injuries are more frequent on the medial than lateral side.
 - c. The tear is usually longitudinal (bucket-handle tear) but may be transverse (parrot beak tear)
 - d. A Meniscus is avascular and a tear doesn't heal unless it is peripheral which is vascularized from the capsule.
 - e. A typical history is that of injury while playing a game. The player falls, feeling pain in the knee. He cannot resume the game but can walk home with a limp.
 - f. The patient may complain of giving way, locking of the joint or recurrent effusion.
 - g. Positive McMurray's sign (a click may be elicited when the knee is rotated in certain degree of flexion)
 - h. MRI is the most reliable method and may even reveal tears that are missed by arthroscopy.
 - i. arthroscopy is diagnostic and therapeutic.
6. Regarding injuries of the cruciate ligaments, it is not possible to repair the torn ACL by simply reconnecting the torn ends. postoperative physiotherapy is essential

Infection of bone and joints**1. Regarding cortical bone**

- a. It forms the shaft of long bones and metabolic turnover is slow.
- b. It can withstand torsional and bending stresses.

2. Regarding cancellous bone

- a. It forms the vertebrae and the ends of the long bones.
- b. metabolic turnover is rapid.
- c. it can withstand compression (contribute to pliability of bone).

3. Regarding blood supply and relation to infection

- a. Before epiphyseal fusion, the metaphysis is richly supplied with blood by end arteries forming hair-pin bends.
- b. the metaphysis is the common site of osteomyelitis in children because the bacteria or emboli are easily trapped in causing infarction
- c. After epiphyseal fusion, vascular communication are established between the metaphyseal and epiphyseal arteries. Now the metaphysis contains no more end arteries and is no longer subject to osteomyelitis
- d. Regarding short long bone,
 - i. Nutrient artery breaks up into a plexus immediately upon reaching the medullary cavity.
 - ii. infection begins in the middle of the shaft rather than at the metaphysis
 - iii. in adults the chances of infection are minimized because of the nutrient artery is mostly replaced by periosteal vessels.

4. Regarding acute hematogenous osteomyelitis

- a. It may even affect the neonates, particularly premature babies.
- b. In children under 4 years of age, the gram-negative hemophilus influenza is common pathogen.
- c. Other gram-negative organisms occasionally cause acute bone infection.

5. Regarding chronic osteomyelitis, Radio-isotopic scanning using technetium-HDP scans, gallium citrate and indium labeled leucocytes are useful for showing up hidden foci of infection.
6. **Regarding TB of bone**
 - a. TB of flat bones (peri-ostitis) the surface of bone is eroded and abscess forms which often open on the surface with sinus formation,
 - b. TB of short long bones (TB dactylitis) metatarsals, metacarpals and phalanges are involved and the infection starts in the diaphysis.
 - c. There is central destruction and the periosteum is raised by TB granulation tissues with sub-periosteal new bone formation. The bone thus becomes fusiform in shape (spina ventosa).
7. **Regarding septic arthritis**
 - a. Septic arthritis is commonly encountered in the knee and the hip joints yet any joint may be infected.
 - b. Suppurative arthritis is more frequent in childhood.
 - c. Septic arthritis is a surgical emergency.
 - d. drainage is either arthroscopic or by open arthrotomy
 - e. IV antibiotics and splinting until inflammation subsides. Later gradual physiotherapy starts
 - f. If the articular cartilage has been destroyed, the joint is immobilized in the optimum position. of function until ankylosis is sound.
8. **Regarding generalized disorders of bones and joints**
 - a. Most dysplasias are familial and patients are short enough to be categorized as dwarf (less than 125 cm)
 - b. Regarding osteoporosis,
 - i. Fractures commonly associated with senile osteoporosis, include colles' fracture, fracture of the vertebral bodies and fracture of the femoral neck.
 - ii. Repeated minor fractures of the spine cause chronic back pain and kypho-scoliosis.
 - c. Regarding hyperparathyroidism, the earliest x ray change is resorption of the laminae dura of the tooth sockets and sub-periosteal erosions of the cortical bones in the phalanges.
 - d. Regarding osteo-arthritis, Total joint replacement is indicated when conservative ttt fails to control the symptoms.
 - e. Regarding charcot's osteoarthropathy,
 - i. In lower limb it is associated with tabes dorsalis, cauda equine and peripheral neuropathy.
 - ii. In upper limb the cause could be syringomyelia or leprosy
 - iii. The commonest site is Charcot's joint of the foot in diabetics

Deformities of the bone and joint

1. **Regarding cubitus valgus**
 - a. The most common cause is nonunion of a fractured lateral chondyle of the humerus.
 - b. The importance of this deformity is the liability for delayed ulnar palsy to develop.
 - c. The deformity itself needs no treatment but for delayed ulnar palsy, the nerve should be transported of the front of the elbow.
2. **Regarding cubitus varus**
 - a. The most common cause is mal-union of supracondylar fracture of the Humerus.
 - b. It looks ugly and hand brushes against the body in walking.
 - c. The deformity can be corrected by a wedge osteotomy of the lower Humerus.
3. Coxa vara is a diminution of the neck shaft angle of the femur below the normal 120-140 degrees.

Amputation

1. **Regarding amputation**
 - a. Amputation is needed when primary healing is unlikely to occur due to infection or ischemia. it is performed at the lowest possible site
 - b. End bearing Amputation
 - i. is performed when weight is to be taken through the end of a stump.
 - ii. The scar must not be terminal and bone end must be solid not hollow which means it must be cut through or near a joint.
 - c. Non-end bearing amputation is the commonest variety. All upper limb and most lower limb amputations comes into this category.
 - d. Break down of a skin flap which may be due to ischemia or to suturing under excess tension is an early complication.
 - e. Gas gangrene is an early complication.
 - f. late complications
 - i. Progress of arterial occlusive disease produce ischemia to the stump.
 - ii. Excess muscle left gives a sense of insecurity which may prevent the use of proper prosthesis
 - iii. Phantom limb
 - iv. Stump neuroma
 - v. Causalgia
 - vi. Joint above may be stiff or deformed
 - vii. Formation of spur

- viii. Osteomyelitis and ring sequestrum
- g. A projecting bone end may result from the use of short flaps or from continued growth of bone in children.
- h. below the knee amputation is most common for vascular disease and infection

2. Regarding syme's amputation

- a. It is a disarticulation at the ankle with removal of the malleoli and the tibial articular surface.
- b. Is better than a below knee amputation because, it is less catastrophic to the patient.
- c. It allows the patient to walk in his room without prosthesis.
- d. It maintains the pleasure of the earth feeling.
- e. It requires a cheap boot known as elephant boot and not an expensive prosthesis.
- f. After 7-10 years re-amputation (below the knee) is usually required as the stump is end bearing and results in ulcerations, callosities and exostosis.
- g. The prosthesis is ugly.

Surgery of spine and the cord

1. Regarding congenital anomalies of the spine

- a. A congenitally wedged vertebra may cause a severe degree of scoliosis or kyphoscoliosis. several vertebrae may be fused esp. in the cervical spine
- b. Sacralization of the 5th lumbar vertebra; means fusion of this vertebra with the sacrum. Such abnormalities can rarely be incriminated as a cause of backache.
- c. Regarding spina bifida.
 - i. Folic acid administration during pregnancy may lower its incidence.
 - ii. It commonly affects the lumbar spine.
 - iii. Spina bifida occulta
 - 1. Presents in about 10% of population.
 - 2. the skin is connected to the meninges by a fibrous band (membrane reunions)
 - 3. In most of cases, no problem arises.
 - 4. in minority of cases about puberty incontinence of urine appears (at first nocturnal enuresis)
 - iv. Meningo-myelocele
 - 1. It is the commonest type of manifest spina bifid.
 - 2. Arnold chiari malformation is usually present. The cerebral tonsils lie at a level below the foramen magnum and obstruct the flow of CSF from the 4th ventricle, thus producing a concomitant hydrocephalus. If untreated 75% of cases die within the 1st year of life.
 - v. Diagnosed by antenatal screening ultrasound and high levels of alpha-fetoprotein in amniotic fluid.

2. Regarding fractures and dislocations of the spine

- a. dislocations and fracture dislocations of the atlas and axis vertebrae are especially serious as they may be fatal because of transection of the cord above the level of the innervations of the respiratory muscles
- b. Atlas dislocation can occur with or without fracture of odontoid process (hangman's fracture)
- c. Stability of spine fractures depends on the integrity of the posterior ligaments; The inter-spinous, supra-spinous and ligamentum flavum.
- d. In concussion, joint position sense is preserved.
- e. A damaged cord that has not recovered in 48 h will never recover.
- f. A very sure sign of cord transection is the presence of the mass reflex at 3-6 weeks and the presence of anal and penile reflexes in absence of sensation on the legs.

3. Regarding of TB of the spine

- a. Developmental kyphosis in children is a differential diagnosis.
- b. Potts kyphosis is characterized by being angular.

4. Regarding of lumbar disc prolapsed

- a. Presented by Low back pain, root pain, motor and sensory changes.
- b. The patient adopts a scoliotic position and has a limping gait.
- c. Straight leg raising or flexion of the spine increases the pain.
- d. Treatment is either by laminectomy and microdiscectomy.
- e. Causes of recurrence of pain after surgery for a lumbar disc
 - i. Removal of a disc from wrong level.
 - ii. Presence of another undiagnosed disc prolapsed
 - iii. Interstitial neuritis of the nerve root due to compression.
 - iv. Osteo-arthritis of the inter-vertebral joints, in this case spinal fusion should be performed during the operation for removal the disc.

5. Regarding spinal tumours

- a. A neurofibroma may be a dumb bell in shape. the smaller part lies within the neural canal while the larger part projects through an intervertebral foramen and encroaches on the thorax
- b. Plain x ray of the spine , anteroposterior, lateral and oblique views should be taken
- c. By plain x ray, erosion of bone or some other bony abnormality is seen in nearly 50% of patients with spinal tumors
- d. Myelography has been superceded by CT and MRI.
- e. removal of the tumour and laminectomy helps in decompression of the cord

6. Regarding disorders of the spine

- a. The most frequent site of spondylo-listhesis is L5/S1
- b. The most frequent site of spina bifida is lumbar
- c. The most frequent site of fracture is dorso-lumbar and cervical
- d. The most frequent site of pott's disease is dorso-lumbar
- e. The most frequent site of disc prolapse is lumbar and cervical

7. Regarding minor procedure

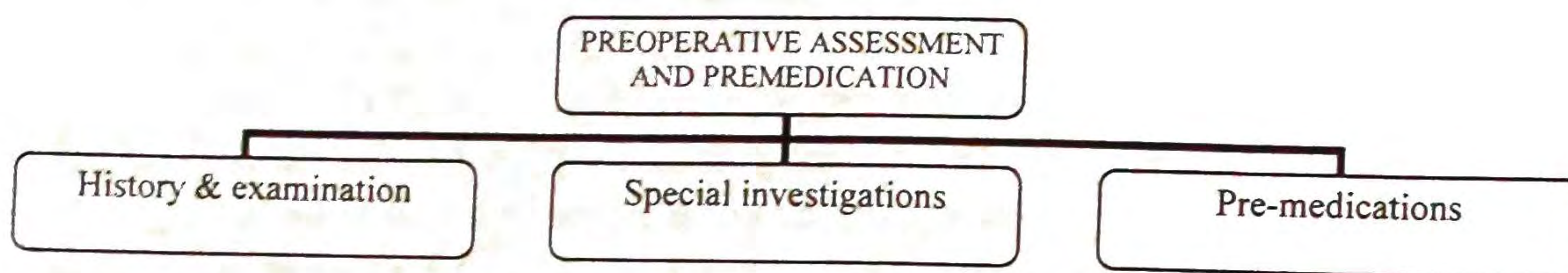
- a. Tracheal intubation
 - i. It is indicated to allow mechanical ventilation in cases of respiratory failure.
 - ii. may be complicated with minor laceration of tongue, dental damage , esophageal intubation.
- b. Central venous catheterization
 - i. Indicated for CVP monitoring, parental nutrition and long term infusion of drugs.
 - ii. Contraindicated in coagulopathy, burn or skin infection at the site of entrance.
 - iii. It is usually performed through the subclavian or internal jugular vein.
 - iv. Chest x ray confirms placement into SVC and rule out Pneumothorax.
 - v. May be complicated by ;

1. Arterial puncture.	4. Pneumothorax
2. Mal-positioning	5. Infection & septicemia.
3. Air embolism	
- c. Venous cut-down
 - i. It is done when percutaneous access to venous system can't be gained.
 - ii. For infants the long saphenous is the preferred vein. while for adults any accessible vein.
 - iii. May be complicated by bleeding, infection, Thrombophlebitis & saphenous nerve injury.
- d. Urinary catheterization
 - i. Indicated for
 - 1. urine retention or urine output monitoring,
 - 2. irrigation of blood clots after prostatectomy,
 - 3. to allow healing after UB surgery or after minor extra-peritoneal ruptures,
 - 4. intra-vasical chemotherapy for superficial bladder cancer,
 - 5. as a stent after urethral surgery for cytourethrography .
 - ii. Contraindicated in urethral injury (suspected by bleeding or perineal ecchymosis)
 - iii. May be complicated by urethral injury, UTI and excessive diuresis.
- e. Nasogastric tube
 - i. Indicated for
 - 1. Enteral feeding.
 - 2. Upper GIT bleeding.
 - 3. Aspiration of upper GIT contents in patients with acute gastric dilatation, paralytic ileus, small bowel obstruction, gastric outlet obstruction or acute pancreatitis.
 - ii. May be complicated by
 - 1. Ulceration and necrosis of the naris.
 - 2. Oesophageal reflux, esophagitis, erosion, stricture.
 - 3. Mouth breathing, mouth dryness and possibly parotitis.
 - 4. Interference with ventilation, coughing.
 - 5. atelectasis and pneumonia.

Pre and postoperative management of a surgical patient

1. Elective surgery should be delayed for 6 months after an attack of myocardial infarction.
2. Patients with valvular disease or prosthetic valves should receive preoperative antibiotics to guard against sub-acute bacterial endocarditis.
3. Aspirin should be stopped ten days before elective surgery.
4. NSAIDs should be stopped 2-3 days before surgery.
5. Oral anticoagulants should be stopped 3-5 days before surgery. If it is necessary prescribe LMW heparin.
6. The dose of steroids should be increased shortly before the operation to tide the patient over the stress of surgery.
7. Contraceptive pills should be stopped 4 weeks before elective surgery to minimize the risk of thrombo-embolism.
8. There are 3 main risks in patient with liver disease
 - a. Bleeding. so it is better to optimize PT, PC and INR before surgery. Vit k and fresh frozen plasma may be necessary.
 - b. Liver failure. Avoid excessive bleeding, hepatotoxic drugs, severe dehydration and sepsis
 - c. Sepsis. Any septic focus or infection should be treated before surgery.
9. General rules for management of diabetic patients
 - a. They are considered as high risk patients even with minor procedures.
 - b. Meticulous survey of the patient is essential.
 - c. Minimize the duration of fasting to avoid hypoglycemia.
 - d. The patient should be kept on just the hyperglycemic side.
 - e. Diabetic patients controlled by insulin may require larger doses of insulin to tide them over the stress of surgery.
 - f. The rate of glucose-insulin infusion can be changed according to the blood glucose level to keep the blood glucose level on the hyperglycemic side.
 - g. Potassium is added to the glucose infusion as required
10. Checklist before transfer to the operating theater include Patient identity, Marking the side of the operation, Informed consent and Prophylactic antibiotic and anticoagulants are administered if indicated.
11. Hypothermia leads to impaired clotting and cardiac arrhythmias.
12. Local complications in the wound include; Seroma, Hematoma, Wound dehiscence, Wound infection, Hypertrophic scar and keloid
13. The following are the complications which may follow abdominal surgery
 - a. Acute gastric dilatation
 - b. Paralytic ileus
 - c. Adhesive intestinal obstruction
 - d. Leakage of gastric or intestinal anastomosis.
 - e. Intra-abdominal abscess
 - f. All the previous complications will lead to nausea and vomiting

PREOPERATIVE ASSESSMENT AND PREMEDICATION



Goals:

1. Evaluation of patient's general health.
2. Optimization of general condition.
3. Choosing and planning safe anesthetic management.
4. Anticipation of complications and planning to avoid them.

A. HISTORY & EXAMINATION:

1) Identification of the patient:

- ☐ Name, age, weight
- ☐ Scheduled operation (site, side and informed consent).

2) Concurrent medical diseases e.g.

- ☐ Cardiovascular diseases.
- ☐ Pulmonary diseases.

3) Concurrent medications e.g.

- ☐ Antihypertensive & Antidepressant drugs.

The golden rule for most of chronic drug therapy is to **continue till the morning of surgery.**

4) Previous exposure to anesthesia:

- ☐ History of adverse reactions.
 - Delayed recovery.
 - Allergic reaction
- ☐ Family history of anesthesia-related problems e.g. Succinylcholine apnea

5) Dentition:

- ☐ Loose teeth should be noted.
- ☐ Artificial teeth or denture should be removed

6) Airway:

- ☐ Examine for features indicating possible difficult intubation.

7) History and examination of patients receiving regional anesthesia:

- ☐ History of coagulation disorder & intake of anticoagulants or anti-platelet drug
- ☐ Examine patients for:
 - Clarity or anatomical landmarks.
 - Evidence of infection of the site of injection.

B.SPECIAL INVESTIGATIONS

- Complete blood count.
- Coagulation profile.
- Basic chemistry (blood glucose & serum electrolytes).
- Liver & kidney functions
- 12-lead ECG and chest X-ray for patients above 40 years.
- Specialized tests for specific patients e.g. pulmonary function tests for patients with significant pulmonary disease.

C. PREMEDICATION:

- Preoperative psychological preparation.
- Preoperative medication

◆ Psychological Preparation:

The following should be explained to patients before surgery:

- ✓ Planned anesthetic technique and its safety.
- ✓ Magnitude of postoperative pain and methods of pain relief.

◆ Pharmacological premedication:

Goals of pharmacologic premedication:

- ✓ Relief of anxiety, analgesia.
- ✓ Prevention of autonomic reflex responses
- ✓ Facilitation of smooth induction of anesthesia

Drugs used

Benzodiazepines: midazolam, diazepam

Opioids: morphine, pethidine

Anticholinergics: atropine, hyoscine and glycopyrrolate

◆ Preoperative fasting and control of gastric volume and pH:

Patients undergoing elective surgery should be instructed to stop oral intake for a minimum of 6-8 hours prior to surgery

Monitoring During Anesthesia

(1) Why to monitor during anesthesia?

Because anesthetic – induced cardio respiratory depressant effect is very serious.

(2) What to monitor?

- ☐ Cardiovascular monitors.
- ☐ Respiratory monitors
- ☐ Temperature measurement
- ☐ Neuromuscular transmission monitoring

(3) How to monitor?

- ☐ In the past, most of vital functions were assessed using the clinician's special senses: hearing (auscultation), touch (palpation), and vision (inspection).
- ☐ Although these continue to be important tools, they are greatly replaced or augmented by specialized measuring equipments: MONITORS.

(1) Cardiovascular monitoring:

- a) Arterial blood pressure
- b) Electrocardiogram:

Value: The electrocardiogram only monitors:

- 1) Heart rate 2) Heart rhythm 3) Myocardial ischemia

(2) Respiratory monitoring: by Pulse oximeter

Value: Hypoxia is a serious problem so noticing it early will prevent disasters. A pulse oximeter will detect hypoxemia long before the patient becomes cyanosed.

(3) Temperature monitoring

Hypothermia is one of the most common causes of delayed recovery from anesthesia.

(4) Neuromuscular monitoring

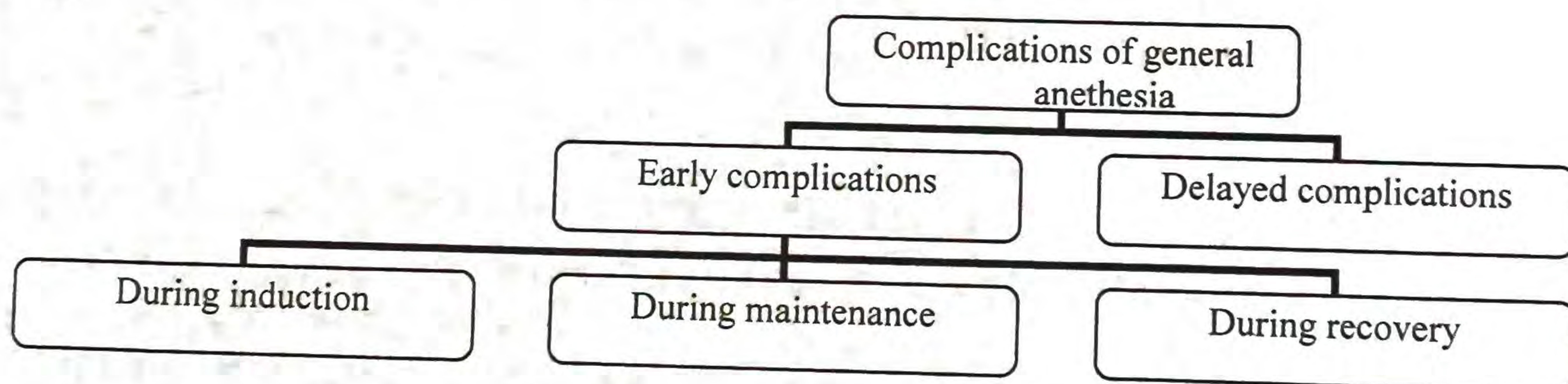
Complications of general anesthesia

Introduction:

Adverse effects and serious complications during general anesthesia are very rare, but the possibility does exist. The risk will vary according to:

- Patient general condition.
- Seriousness of operation.
- Skill of anesthetist and available facilities.

The chance of a healthy person dying as a result of anesthesia is probably between 1 in 200,000 and 1 in 400,000. This is certainly safer than traveling by car.



Complications during induction of anesthesia:

➤ **Airway manipulation:**

- ☐ Failure to intubate.
- ☐ Undetected esophageal intubation
- ☐ Laryngospasm (mainly in children) Hypoxia
- ☐ Reflex bronchospasm.
- ☐ Aspiration of gastric contents.
- ☐ Intubation injury teeth, lips, pharynx, larynx, and trachea

➤ **Cardiovascular stress response to intubation**

- ☐ Hypertension, dysrhythmia.
- ☐ Myocardial ischemia.

➤ **Administration of intravenous anesthetic drugs:**

- ☐ Drug overdose leading to severe hypotension and hypoventilation.
- ☐ Inadequate anesthetic doses leading to lack of analgesia and possibly intraoperative recall of events "awareness".
- ☐ Histamine release leading to hypotension and/or bronchospasm.
- ☐ Allergic drug reaction e.g. anaphylaxis.
- ☐ Drug interaction e.g. interaction of pethidine with antidepressants.
- ☐ Accidental intra-arterial injection which may lead to gangrene in case of thiopental.
- ☐ Injection of the wrong drug.
- ☐ Prolonged apnea after succinylcholine due to congenital deficiency of cholinesterase enzyme.

Complications during the maintenance of anesthesia:

- ☐ Undetected patient-ventilator disconnection (severe hypoxia).
- ☐ Accidental administration of hypoxic gas mixture.
- ☐ Inadequate fluid or blood replacement leading to circulatory instability.
- ☐ Nerve injury due to inappropriate patient positioning.
- ☐ Corneal ulcers due to exposure and lack of protective reflexes.
- ☐ Malignant hyperthermia which is a very rare complication with the use of succinylcholine and halothane in susceptible patients.

Complications during recovery from anesthesia:

- Depressed protective airway reflexes predisposing to aspiration of secretions of vomitus (hypoxia).
- Inadequate recovery of muscle power and inability to maintain a patent protected airway (residual paralysis).
- Postoperative nausea and vomiting.
- Sore throat associated with endotracheal tube placement.

Delayed complications of anesthesia:

- Muscle pains following the use of succinylcholine.
- Anesthesia-induced hepatic toxicity. This is very rare and had been attributed to the use of halothane (hepatotoxicity). Modern inhalational anesthetics e.g. isoflurane are safe in this respect.

Minimizing complications:

- ✓ Preoperative evaluation of critical patients.
- ✓ Before proceeding with anesthesia, check the equipment to be used and make sure that backup facilities are available.
- ✓ Anticipate the possible problems of each particular anesthetic or particular patient condition.
- ✓ Close patient monitoring will pick-up problems early.
- ✓ During crisis move efficiently but not with undue panic
- ✓ During training period, ask questions and call for help early when in doubt.

LOCAL ANESTHESIA

Toxicity of local anesthetics

Toxic reactions to local anesthetic agents may be due to:

- ☐ Use of excessive doses
- ☐ Accidental intravascular injection.
- ☐ Rapid absorption from a vascular site.

Precautions:

- ☐ Proper dosage
- ☐ Slow injection with frequent aspiration
- ☐ Dose reduction with liver dysfunction.
- ☐ Availability of emergency drugs and vital signs monitoring.

Manifestations of local anesthetic toxicity:

Local anesthetic toxicity primarily involves the CNS and cardiovascular systems. The severity of symptoms is directly related to the serum level of local anesthetics. Bupivacaine is generally more cardiotoxic than lidocaine.

Clinical manifestations of toxicity include:

1. *Allergic reactions* (skin rash, bronchospasm, angioneurotic edema, hypotension and anaphylactic shock in severe cases)
2. *Vaso-vagal syncope* in sensitive patients
3. *Overdose toxicity* : 2 stages
 - a. **CNS stimulation:** hypertension, bradycardia, respiratory stimulation, irritability, tremors and convulsions
 - b. **CNS & cardiovascular depression:** hypotension, weak rapid pulse, respiratory depression, coma and cardiac arrest in severe cases.

Spinal anesthesia

Complications of spinal anesthesia

Early	Delayed
1. Hypotension	1. Headache
2. Bradycardia	2. Urinary retention
3. Respiratory distress with high block	3. Meningitis or meningism (rare)
4. Nausea and/or vomiting	4. Haematomal formation (rare)
	5. Neurologic deficits (rare)

N.B.)

- I) Meningism is aseptic form of meningeal irritation
- II) Headache:
 - The frequency of headache is related to the size of spinal needle
 - It may be due to leakage of CSF from the dura
 - Treatment consists of fluid administration, analgesics and rarely an epidural blood patch (epidural injection of 10-30 mL of sterile blood taken from the patient himself).

Contraindications to neuroaxial block (spinal anesthesia)

Absolute:

- ☐ Known allergy to local anesthetic drugs.
- ☐ Lack of patient consent.
- ☐ Infection at the site of needle insertion.
- ☐ Increased intracranial pressure.
- ☐ Bleeding or coagulation disorders.

Relative:

- ☐ Hypovolemia
- ☐ Low fixed cardiac output
- ☐ Systemic sepsis
- ☐ Progressive neurologic diseases.

MANAGEMENT OF POST-OPERATIVE PAIN

Regimens available for postoperative pain control include:

- Regional techniques
- Parenteral analgesics
 - Non-steroidal anti-inflammatory drugs (NSAIDs)
 - Oral opioids
 - Parenteral analgesics

Regional and local analgesia

Peripheral nerve blocks and neuroaxial administration of local anesthetics and/or opioids are now established as efficient and safe methods for postoperative pain treatment

Parenteral analgesics

The WHO scheme for management of pain

- ◆ *Mild*: non opioid NSAIDs
- ◆ *Moderate*: short acting opioids ± NSAIDs
- ◆ *Severe*: long acting opioids ± short acting opioid for breakthrough pain ± NSAIDs

(1) NASID:

NSAIDs have several advantages over opioids:

- No hemodynamic effects
- No respiratory depression
- Less incidence of nausea and vomiting

NSAIDs must be avoided in patients with:

- Thrombocytopenia & coagulopathies
- Renal dysfunction
- Liver dysfunction
- Peptic ulcer disease
- Bronchial asthma

(2) Oral opioids:

Medicines given by mouth cause less discomfort than injections, but they can work just as well. They are inexpensive, simple to give, but there may be a delay in pain relief.

e.g. Tramadol (Tramal): Advantages:

- Available in oral preparation
- Well tolerated after intramuscular and intravenous administration
- It has analgesic potency roughly similar to pethidine
- Not associated with cardiovascular or respiratory depression
- Very low dependency liability

(3) Intermittent intramuscular opioids:

- Intramuscular morphine and pethidine, is the most popular method of postoperative pain management.
- This method is often associated with under-dosing.

Disadvantages of intramuscular opioids:

- Painful
- Steady blood concentration is difficult to sustain
- Delay between time of injection and onset of pain relief
- Inconvenience and lack of patient satisfaction
- Risk of respiratory depression and overdose

(4) Intravenous opioids:

Pethidine and morphine are suitable drugs for continuous intravenous infusions but it needs initial loading bolus dose.

(5) PCA (Patient Controlled Analgesia):

Patient controlled analgesia allows the patient himself to receive drugs on demand.

Choice of parenteral opioid drugs

- ☆ Morphine and pethidine (mepiridine) are the standard agents for opioid therapy.
- ☆ Morphine is better avoided in patients with liver dysfunction or bronchospastic diseases.
- ☆ Pethidine is not advisable for patients with impaired renal function.

Dosage of opioids

- ☆ Patients vary greatly in their analgesic dose requirements and responses to opioid analgesics.
- ☆ The recommended starting parenteral doses e.g. 1 mg/kg pethidine or 0.1 mg/kg morphine, may be inadequate or potentially high.
- ☆ Subsequent opioid doses (especially the case in elderly patients, infants or patients with poor general condition) must be titrated to optimize analgesia and reduce side effects.

Neuroaxial (spinal or epidural) opioids:

- ☆ Opioids administered by this route provide adequate long-lasting pain relief without sensory loss, muscle paresis or autonomic blockade.
- ☆ The dose of neuroaxial opioids is much lower than their intramuscular or intravenous dose (10-25%).

N.B.: Post operative pulmonary complications

- Basic life support = Prehospital
- Advanced life support = at hospital

See
A.H. NOTES

GOOD LUCK